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ABSTRACT

This monograph presents a "state of the art" overview of contemporary aphasia rehabilitation policies and resources in Asia and the Pacific region. Following Martha Taylor Sarno's introduction, Sumiko Sasanuma discusses the history and development of Japan's aphasia rehabilitation services, focusing on demography and data sources, assessment and treatment procedures, issues, and recommendations. The current status of aphasiology in China is described by Wang Xinde, who outlines the clinical manifestation of aphasia, alexia, and agraphia in Chinese and the rehabilitation process. India's aphasia rehabilitation is reviewed by Prathibha Karanth, focusing on history, facilities, staff, funding, family supports and home training, advocacy, research, and sociocultural factors. The situation in Australia is presented in two papers--Alison Ferguson focuses on the aphasic population, providers of rehabilitation services, service delivery models, and research trends; and Jennifer Lambier describes service delivery models, treatment goals, assessment, and remediation. For New Zealand, Ellie Glazer reports on epidemiological data, speech language therapy, and a stroke support network. Reference lists accompany each chapter. (JDD)

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45 APHASIA REHABILITATION IN ASIA AND THE PACIFIC REGION: JAPAN, CHINA, INDIA, AUSTRALIA AND NEW ZEALAND

Edited by: Martha Taylor Sarno and Diane E. Woods

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World Rehabilitation Fund

International Exchange of Information in Rehabilitation

Monograph #45

Aphasia Rehabilitation in Asia and the Pacific Region: Japan, China, India, Australia and New Zealand

Edited by Martha Taylor Sarno
and
Diane E. Woods

International Exchange of Experts
and Information in Rehabilitation
World Rehabilitation Fund, Inc.
400 East 34th Street
New York, NY 10016

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PREFACE AND ACKNOWLEDGEMENTS

Since 1978, the World Rehabilitation Fund (WRF) has administered a program funded through the U.S. Department of Education (The National Institute of Disability of Rehabilitation Research). This program, the International Exchange of Experts and Information in Rehabilitation (IEEIR) provides opportunities to U.S. disability specialists who apply competitively for fellowships to conduct short-term study-visits abroad. Also, in carrying out the broad objective of this program: to "import" knowledge related to disability issues to the U.S., monographs are published on disability topics of interest prepared by foreign specialists, and distributed in the U.S. To date, WRF - IEEIR has published forty-four monographs on a variety of topics related to disability and rehabilitation (a list of monographs still available for distribution appears in the back of this monograph; and in addition to the monographs, reports of many of the study-visits are available).

Since September 1987, WRF - IEEIR has focused on Africa, Asia, the Pacific Region and the Middle East. This monograph on Aphasia Rehabilitation includes chapters from Japan, China, India, Australia and New Zealand. Although rehabilitation policies and resources vary, each of the contributions from these countries offers something of interest and value to the informed reader.

Martha Taylor Sarno's introduction and overview contributes greatly to the overall understanding of the monograph. Her involvement in the production of this monograph has been an important factor in its completion. We want to acknowledge each of the authors who has contributed to this monograph. Finding each of them and communicating our expectations and goals for the monograph was an interesting process. Cross-cultural communication is a challenge. Nonetheless, despite differences in approaching the task of writing about aphasia rehabilitation in one's country, the results presented here are, I think, exciting and will offer a new perspective to the interested reader.

Diane E. Woods
Project Director, IEEIR
April 1989

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Introduction

Martha Taylor Sarno

Few aphasiologists working in the Western World have been exposed to the work of their colleagues in the Pacific area. To some extent this is caused by the inherent difficulties involved in sharing literature when the languages involved are as different from each other as the Asian and Anglo-European. In the case of Australia and New Zealand, the two English-speaking countries represented here, only a limited number of publications have been readily available in the West. The combined effect of these factors is that our awareness and knowledge of the rehabilitation management of the patient with aphasia in the Pacific region has been sadly lacking. This volume attempts to begin to fill the void by presenting a "state of the art" overview of contemporary aphasia rehabilitation in Japan, China, India, New Zealand and Australia prepared by leaders in each of the countries represented.

In an informal sense, the history of aphasia rehabilitation is probably as old as the human species, which seems always to have had a natural inclination to try to facilitate the healing process.

As Dr. Karanth (chapter 3) points out, Sanskrit documents written as early as 1500 B.C. reflected knowledge and concern for stroke and aphasia by explicitly stating prescriptions based on the Indian system of medicine, Ayurveda. Ayurveda is still practiced in rural India and in urban areas where it serves as an alternative for speech and language therapy by giving hope to those who become disenchanted with the slow and laborious process of recovery in aphasia.

Early references to aphasia rehabilitation in Western literature appeared as innovative attempts to "cure" aphasia (Mettler, 1947; Goodglass, 1985). Reports of efforts by a few neurologists to "retrain" people with aphasia in a manner similar to contemporary aphasia rehabilitation practices appeared as early as the 17th century (Benton and Joynt, 1960); at the turn of the century in Germany (Gutzman, 1884, Goldscheider, 1902); in London (Broadbent, 1899) and in the United States (Hun, 1847; Mills, 1880, 1904). During both world wars a significant number of individuals with aphasia due to head trauma, usually missile wounds, were treated (Head, 1926; Goldstein, 1948, Wepman, 1951) especially in Germany. In the United

States the World War II experience led to the development of programs to treat civilian aphasic patients.

Except for Japan, incidence figures based on epidemiological studies of aphasia are not generally available. Japan may be one of the few countries in the world where a series of nation-wide surveys (conducted over the past ten years) have yielded aphasia incidence information. Stroke is the primary etiology of aphasia (89% to 91.4%) followed by head injury (4.1% to 7.7%). It was determined on the basis of three data sources that there is a pool of 200,000 aphasic patients in Japan. The male/female ratio is roughly 2:1 and the prevalence of aphasia has its peak in the 60's age range.

In India collaborative research study is currently underway sponsored by the Council on Medical Research which intends to establish and relate incidence to age, type, and literacy in the aphasia population. An estimate suggests that approximately 20% of all CVA cases in India manifest aphasia. China reports a high rate of 114-187 per 100,000 and it is estimated that 16% of this number is aphasic. In New Zealand it is reported that of the estimated 5500 stroke patients, 1100 required speech therapy.

While demographic surveys of aphasia have not yet been conducted in the United States, it is estimated that more than one million individuals have acquired aphasia primarily as the result of stroke (National Institute of Neurological and Communicative Disorders and Stroke, 1979).

In the countries represented in this monograph, aphasia rehabilitation services are provided by speech-language pathologists except in China where neurologists are the primary providers. The type and length of professional training varies . In Japan, for example, speech-language pathologists are trained for one year in non-university government schools. There is also a small group of graduate level people who were trained in the United States. In Australia there has been a slowly expanding speech-language pathology profession, clustered in capital cities, which now numbers over 1300. Speech-language pathologists in India are also concentrated in large, urban centers. All of the authors expressed a great need for additional, trained speech-language pathologists to meet the needs of those with aphasia in their respective countries.

The services available for individuals with aphasia in the five countries represented are generally administered through medical programs organized under departments of health and are available primarily in large urban areas. In Japan, the first aphasia rehabilitation services were

developed in the early sixties, at Kageyu Hospital. Since then more than 500 aphasia clinics have been established. In China where neurologists have traditionally administered medications and acupuncture as interventions in aphasia, a number of speech therapy programs have begun to emerge in sanatoria and rehabilitation centers, especially in Beijing. The development of these programs was stimulated by Dr. Sumiko Sasanuma who gave a series of lectures sponsored by the World Health Organization as part of the "Symposium on Cerebral Vascular Disease in the Elderly" in 1987.

Payment for aphasia rehabilitation services varies from country to country. Although there is not a social security or public health scheme operating in India, poor patients can receive services free of charge at large private hospitals such as Christian Medical College. Middle and upper class patients tend to pay private fees at smaller institutions. In New Zealand most aphasia rehabilitation services are reimbursed by the government through a system of hospital and area health boards. Fees for rehabilitation services in Japan are reimbursed from 70 to 90% by the medical insurance system. However, as Dr. Sasanuma points out there is a serious flaw in the system since speech-language pathology fees are so low that institutions with aphasia clinics incur considerable financial deficit. This could ultimately reduce the availability of services for those with aphasia.

Virtually all of the authors express the need for community support programs for people with aphasia. Interestingly, the establishment of national advocacy organizations in the East in the early eighties predates the development of the National Aphasia Association in the United States but is concurrent with the establishment of such groups in Scandinavia, West Germany and the U.K. Dr. Karanth mentions this as a major lacuna in India. In New Zealand, *Counter Stroke, Inc.*, a national stroke organization which was established in 1981, includes a network of volunteer support for aphasic patients inspired by the British Volunteer Stroke Organization. It provides not only activities but an alternative social life for many with aphasia and their families. In Australia, in spite of a fifty-year history of speech-language pathology services, advocacy organizations have only recently begun to develop. In Japan the Association of Aphasia Peer Circles, which began in the past decade, now consists of 86 aphasia community groups.

With the exception of Japan the multiplicity of languages and dialects used in all of the countries represented raises serious problems for the provision of diagnostic and treatment services for patients with aphasia. The situation demands that assessment and treatment tools be available in the patient's language. Furthermore, there must be qualified speech-

language pathologists who are competent in many languages to determine which language to use for treatment. In India a population of 800 million individuals speaks over 700 languages and dialects of which 17 are spoken by a sufficient number to have been designated as official languages. One patient may speak one language at home, another at work and use a third for reading and writing. Half the population is illiterate and while aphasia appears to be less shattering to illiterates than to those who can read and write, illiteracy puts added strains on the creativeness of the speech clinician. China, too, will face the complications imposed by dialectical differences as its planned program for extending rehabilitation services beyond the capital at Beijing materializes.

The need in aphasia rehabilitation for the examiner and/or therapist to have mastery over a patient's native language has become increasingly problematic in many large urban centers in the Western World. Here, aging members of immigrant populations who acquire aphasia have become a significant category of individual's seeking aphasia rehabilitation services. The need can only be met by encouraging and facilitating the professional training of individuals who represent the various ethnic communities.

In New Zealand while the overwhelming majority has cultural origins in the United Kingdom, 12.4% are indigenous (Maoris), and 2.6% represent immigrant origins from nearby Pacific Islands. The health system, formerly oriented to the majority is now consciously promoting a bicultural approach to health care. In Australia there is also a similar problem in that there is a large number of minorities for whom English is a second language requiring multi-lingual speech-language pathologists. Unfortunately, the Australian Aboriginals live in the North Territories where the fewest service providers are available. The largest concentration of other ethnic minorities is in the major cities. This immigrant population is now aging, therefore requiring rehabilitation services heretofore designed only for the English-speaking community.

Aphasia rehabilitation practices in the Pacific region have tended to follow the same precepts as those of the Western World. Many New Zealand therapists have been trained overseas and, therefore, use western assessment and treatment methods and materials. In Australia, Luria's theoretical model prevails with assessment accomplished with both norm and criteria-referenced tests. Aphasia treatment uses techniques from cognitive neuropsychology, clinical psychology, and behavior modification in addition to traditional pedagogic approaches and functional communication training using gestural and computer programs. Japan, too,

espouses a western, cognitive and information-processing model. Systematic assessment is the basis for hypotheses based on symptom patterns in patients, from which treatment programs are developed. The use of electronics and an increasing emphasis on eliciting pragmatic, functional abilities are evident there. China and India exemplify the meetings of East and West in aphasia rehabilitation strategies. In both countries classical medical treatment models as well as western therapeutic techniques are employed. In China medical interventions include the use of medicine and acupuncture (including direct stimulation of the speech mechanism.) In India, the traditional medical model includes hot baths, massages, ointments and homeopathic treatments. However, western-style team-approaches to diagnostics and therapy are also in use although teams generally lack social workers and occupational therapists.

Conclusions

Since aphasia is a language disorder, one expects that its impact varies from country to country depending on the character and structure of the country's national language, whether multiple languages are spoken, and whether or not the written language requires mastery of more than one code. Japan is a case in point. However, the insights and perspective offered by the contributions in this volume highlight the universality of needs and issues inherent in aphasia rehabilitation throughout the world. They are:

(1) the need for an increase in the number of specialized, professionally trained aphasia therapists,

(2) the need to provide services to individuals living in non-urban areas where services are few,

(3) the lack of available reimbursement for aphasia rehabilitation services even when there is reimbursement available for the rehabilitation of physical disabilities,

(4) the difficulty of maintaining patient and family commitment to the long process necessary in aphasia rehabilitation,

(5) the need for advocacy groups for support and community activity,

(6) the burden imposed by the scope of responsibility which falls to the speech and language pathologist in the chronic stages of rehabilitation after other members of the team have withdrawn services.

(7) the need to find better ways of addressing the problems re sultingfrom

multilingualism;

(8) the need for cross-language studies designed to assess the variations across languages and their differential effects on the patterns of aphasia symptomatology manifest in different language groups.

It is a privilege to share interests and concerns about aphasia rehabilitation with our colleagues in the Asian Pacific region of the world. We are grateful to the World Rehabilitation Fund for providing a window on the activities of aphasiologists in that part of the world through the medium of this monograph.

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1

Aphasia Rehabilitation in Japan: State of the Art

Sumiko Sasanuma

I. HISTORY AND DEVELOPMENT

Published studies of aphasia in Japan date back almost one hundred years, but the major focus of investigations until the end of the 1950's tended to be on clinico-pathological correlates of aphasia conducted mostly by physicians with a theoretical background in European psychiatry or neuropsychiatry. It was in the early 1960's that a more empirical/pragmatic approach to the problem of aphasia through a new type of discipline called speech and language pathology (or logopedics in some European countries) was first introduced to this country. Since that time, there has been increasing interest in the therapeutic aspects of language and communication disorders in aphasia, with substantial expansion of the field as a whole. The past decade has witnessed a significant development in the level of both theoretical and technical sophistication in clinical aphasiology.

The first clinic devoted exclusively to the treatment and rehabilitation of aphasic patients was formally established in Kageyu Rehabilitation Hospital in the spring of 1965 with three speech and language clinicians as staff members and myself as a supervisor. This was two years after the inauguration of the Japanese Association of Rehabilitation Medicine and about one year after the visit to the same hospital by Martha Taylor, then chief of the Speech-Language Pathology Department of the Rusk Institute of Rehabilitation Medicine, New York University Medical Center. Her visit was undoubtedly one of the contributing factors in the opening of this first clinic exclusively devoted to aphasia rehabilitation services in Japan. Among other contributing factors were (1) the insight and perspective of Dr. Kunihiko Fukui, M.D., then director of Kageyu Hospital, toward the importance of incorporating clinical services for the treatment of aphasia in rehabilitation hospital settings. (2) my own enthusiasm for therapeutic intervention and rehabilitation of aphasic patients as well as for providing professional training to prospective speech and language clinicians, (3) the devotion and diligence of the three staff member/trainees, who willingly

went through highly demanding learning experience to gain the knowledge and experience expected of competent clinicians for aphasia rehabilitation, and finally (4) the aphasic patients themselves who not only responded to our intervention with great enthusiasm but who also showed substantial improvement in their language and communication functions.

Thereafter, many other hospitals followed Kageyu Hospital's example. The number of aphasia clinics has increased substantially over the last two decades, so that more than 500 clinics are estimated to exist throughout the country at the present time (Association of Aphasia Peer Circles, 1988). Along with this increase in the number of aphasia clinics, there has been an increasing interest in, as well as awareness of, the issue of rehabilitation services for aphasic individuals in various sectors. Clinical as well as basic research in the evaluation and treatment of aphasia has begun to gain a firmer status in aphasiology. In 1977, two academic organizations directly involved in scientific study of aphasia and related issues, the Japanese Society of Aphasiology and the Neuropsychology Association of Japan, were inaugurated, each of which has a membership of over a thousand at the present time.

II. DEMOGRAPHY AND DATA SOURCES

We do not have reliable data on the incidence/prevalence of patients with aphasia. This is partially due to the lack of qualified speech and language clinicians who would be able to identify aphasic patients (so as to be able to offer appropriate rehabilitation services to them). For example, we do not as yet have any officially recognized certification/license system for speech and language clinicians in Japan which is comparable to that in the U.S.A. This situation undoubtedly constitutes a major obstacle in accurate diagnosis of aphasia and, hence, in determining a census of individuals with aphasia.

However, there are a few data sources by means of which we can arrive at a rough estimate of the prevalence of aphasia. The first source has to do with the data on etiologies of aphasia. According to a series of nationwide surveys on aphasia and related issues conducted over a period of the last ten years in 1978, 1982, 1985 and 1987 (Survey Committee on Aphasia Rehabilitation in Japan, 1979, 1983, 1986, 1988)[1]. CVA's constituted the overwhelming majority of the etiologies of aphasia (from 89.5% to 91.4%) in Japan, followed by head injury (from 4.1% to 7.7%), brain tumor (from 1.0% to 4.0%) and others. This means that if we have additional data on (a) the prevalence of CVA's as well as on (b) the prevalence of aphasia among the CVA patients, then we can come up with a rough estimate of the incidence

of aphasia.

The second source is a nation-wide comprehensive survey conducted by the Ministry of Health and Welfare (1988) which indicates that the sum total of patients with CVAs who received some type of medical care in the year 1986 in Japan is reported to be 426,000 (265,000 men and 161,000 women, a ratio of roughly 3:2)[2]. Since these figures do not include those chronic post-stroke patients who did not seek medical care in 1986, however, the actual number of patients with CVAs may be somewhat greater, probably about 500,000.

There is a third source of data: a series of studies on the prevalence of aphasia among CVA patients but with considerable variability in the findings of different investigators. Prevalence figures reported included 9% (35 CVA patients in Yamanashi prefecture studied by Kobayashi et al. in 1964), 22% (187 CVA patients studied by Kirikae in 1964), 24% (197 CVA inpatients in Kyushu University Hospital by Katsuki (1968), and 27% (1395 CVA in-patients in 54 national Hospitals distributed throughout the country studied by Murakami, et al. in 1981). The results obtained from the last study appear to be most reliable in that they were based on a large number of patients sampled from various parts of the country and the diagnosis of aphasia was made by experienced speech and language clinicians. On the other hand, since CVA patients with aphasia may tend to seek hospitalization more often than those without aphasia, studies based on the in-patients in hospitals may tend to show an incidence rate higher than a rate based on the whole CVA population. Thus, the overall prevalence of aphasic patients among CVA patients may be estimated to lie somewhere between 15% and 25%, or an average of 20%.

If we combine these three data sources above and multiply the total number of CVA patients (500,000) by the prevalence rate of aphasia among CVA patients (20%), then we come up with a rough total of about 100,000 stroke-induced aphasic patients plus 10,000 more aphasics with other etiologies in Japan.

Table 1 on the next page shows the age distribution of aphasic patients based on the series of four surveys referred to in the above (Survey Committee on Aphasia Rehabilitation in Japan, 1979, 1983, 1986, 1988). It can be seen that the prevalence of aphasia had its peak in the 60's age bracket during the past ten years, and that the number of patients aged 60 and over constituted from 41.3% to 55.7% of the total, with an average of almost half of the whole aphasic population[3]).

Table 1. Age Distribution of Aphasic Patients
(based on the four nation-wide survey series)

	Years of Survey			
	1978	1982	1985	1987
Total Number of Patients	4,809	9,579	12,990	10,834
Age(years)				
- 39	12.2 (%)	6.5 (%)	7.6(%)	9.0(%)
40 - 49	18.8	14.6	17.4	13.9
50 - 59	26.7	25.1	28.9	27.4
60 - 69	29.1	31.9	30.5	29.1
70 -	12.2	21.4	15.2	20.2
Unknown	1.0	0.4	0.4	0.5

As for the gender distribution of aphasic patients, the same series of four surveys shows that the male/female ratio is roughly 2:1. The greater incidence of aphasia among men is due in part to a higher occurrence of CVAs in men than in women in this country (a ratio of roughly 3:2) as is reported by the Ministry of Health and Welfare Survey (1988). However, the fact that the gender difference is greater for the incidence of aphasia than for the prevalence of CVA's appears to indicate the contribution of some additional factors, which may be either neurobiological in nature (e.g., lower incidence of aphasia among female CVA's due to neurobiological factors yet to be specified) or psycho-social (e.g., smaller portion of female aphasics seeking professional services), or the interaction of both.

III. STATUS OF SERVICES PROVIDED

Who Administers the Services and How Often?

As stated in the previous section, an officially recognized certification system for speech and language clinicians is yet to be established in Japan. According to the above mentioned series of nation-wide surveys on aphasia rehabilitation services (conducted in 1978, 1982, 1985 and 1987), however, there has been a steady increase not only in the number of hospitals/institutions with clinics or divisions offering aphasia therapy, but also in the number of speech and language clinicians engaged in the evaluation and treatment of aphasic patients in these clinics (**Table 2**). The number of aphasic patients receiving therapy has also increased considerably.

Table 2. Increase in the number of (1) hospitals/institutions with a division offering aphasia therapy (aphasia clinics), (2) aphasic patients served, and (3) clinicians engaged in aphasia therapy, based on the four nation-wide survey series.

	Years of Survey			
	1978	1982	1985	1987
Aphasia Clinics	212	267	370	365
Aphasic Patients	5,027	8,657	16,542	11,605
Clinicians	236	364	425	584

The majority of these clinicians are graduates of a one-year graduate-level training course in speech and language pathology offered by a non-university, government-supported training school, i.e., College for Speech-Language-Hearing Therapists, the National Rehabilitation Center for the Disabled[4]. However, there are also some clinicians who have attended courses of as short as six weeks. Only a handful of clinicians has had two or more years of graduate level professional training in speech/language pathology, mostly in the U.S.A. The quality of services offered by these clinics, therefore, varies considerably depending not only on the number of clinicians available, but also on the level and nature of professional training received by individual clinicians.

In terms of the frequency and length of therapy sessions, the majority of aphasic patients served in the 304 aphasia clinics which responded to the survey receive 30 to 45 minute therapy sessions, 3 to 5 times per week for a period of 3 to 6 months. As for the types of facilities available to clinicians, the majority of these clinics have an average of 2.3 rooms for the exclusive use of aphasia therapy, as well as some basic audio-visual equipment (e.g., tape recorders, language masters, etc.).

How Are the Services Paid For?

The evaluation and treatment services offered to aphasic patients are covered by the medical care insurance system as well as other medical and rehabilitation services.

Japan's medical care insurance system was introduced through the Health Insurance Law, enacted in 1922 and put into effect in 1927. Since April 1961, there has been universal insurance coverage for the entire Japanese population under which everyone is covered by some form of public medical care insurance with a coverage rate of 70% to 90% of the

expenses incurred by the insured[5].

However, a serious flaw exists in the system. The fees allowed for speech and language services are extremely low at this time (from 150 yen to 250 yen per session for examination/evaluation, and from 100 to 150 yen per session for treatment/therapy), causing a large financial deficit for hospitals/institutions with aphasia clinics. According to a recent survey of 57 representative hospitals/institutions throughout the country offering speech and language services, the ratio of average earnings to cost for these services was found to be 100:312 (Niki, 1987). This situation will certainly discourage the expansion, or even maintenance, of aphasia clinics on the part of hospitals/institutions, which in turn may reduce the availability of clinical services to aphasic individuals.

IV. TREATMENT OF APHASIA: STATE-OF-THE-ART

Clinical Procedures Currently in Use

The clinical procedures for aphasia rehabilitation are generally conceived of as consisting of a series of dynamically interacting steps: Step 1, gathering necessary information about language and communication disorders as well as related problems by means of testing and observational methods; Step 2, framing hypotheses about the nature and course of the problem based on a critical analysis of the data gathered in step 1; and step 3, testing these hypotheses through therapeutic intervention. The procedures in Step 1 and Step 2 are essentially an assessment or evaluational-diagnostic work-up, which is of crucial importance for the adequate planning and execution of treatment and rehabilitation procedures in Step 3 (Sasanuma, S., Itoh, M., Watamori, T., Fukusako, Y. and Monoi, H., 1978).

Assessment/Evaluation

To obtain an optimal description for the nature of language deficits, the approach taken in most clinics is the administration of a comprehensive, standardized language test. In some clinics, the findings obtained from this formal test are supplemented by the administration of some additional tests for an in-depth assessment of specific areas of dysfunction. Tests for nonverbal cognitive abilities, such as visuo-spatial and constructive function, are also given to selected patients in order to gain a more complete picture of their mental status (Benton, 1982).

Standardized Language Tests

There are two standardized language tests currently in use in most of the Japanese clinics: the Standard Language Test of Aphasia (Hasegawa, 1975) and Roken (a Japanese abbreviation for Tokyo Metropolitan Institute of Gerontology) Test of Differential Diagnosis of Aphasia (RTDDA)(Sasanuma, et al. 1978). Since there are more similarities than differences between the two tests, only the latter will be described.

The RTDDA is a comprehensive examination designed to sample a wide variety of language behaviors at different levels of difficulty. It was standardized on a representative sample of 100 aphasic patients, and is used at intake as well as at regular re-evaluations.

The goals of the RTDDA include: (1) arriving at a differential diagnosis of aphasia distinguishing it from nonaphasic language disturbances such as those due to general intellectual impairment or dementia, memory loss, or confusional state, (2) identifying the type and severity of aphasia, (3) establishing a prognosis for recovery of language skill, (4) identifying realistic treatment goals and appropriate treatment tasks, and finally (5) evaluating recovery from aphasia following therapeutic intervention.

The current version of the RTDDA is the result of several systematic revisions of the original experimental version of 1965[6], incorporating the results of a series of factor analyses with data from a large number of aphasic patients (Sasanuma, 1972; Fukusako, 1974). The battery is composed of 48 subtests grouped into five broad areas: auditory comprehension, oral expression, reading and writing, and arithmetic functions. The nature and kind of subtests included are comparable to comprehensive tests currently in use in other parts of the world, except that a fair number of subtests for processing kana (phonetic symbols for syllables) and kanji (ideographic symbols representing morphemes) are included in the battery. The reason is that relative performance levels in kana and kanji processing have important diagnostic implications. Responses are scored as either correct or incorrect for 46 subtests and on a rating of 1 to 6 for 2 subtests, which are then arranged as a Z-score profile. The Z-score conversions for the RTDDA subtests are based upon the standardization data obtained from a representative sample of 100 aphasic patients. These profiles are useful not only for classifying patients with respect to type and severity of aphasia, but also for charting recovery over time in individual patients. The time requirement of the RTDDA is two to three hours. Thus the test is administered in small portions over several days.

In interpreting the test results, emphasis is placed on a clinical analysis of the obtained data in such a way that the neuropsychological mechanism(s) underlying the symptom complex, or the core deficit(s), can be identified as well as the five test objectives (specified above) attained.

Tests for Specific Functions

To supplement the information gained by the standard test battery, a variety of tests aimed at probing specific areas of language and communication disorders have been developed. The following are only a few examples:

(1) **The Token Test**: The Japanese version of a short form (Spellacy & Spreen, 1969) is used to examine subtle auditory comprehension deficits.

(2) **Syntax Test of Aphasia** (Fujita, Miyake & Nakanishi, 1983): This test consists of a 40-item sentence comprehension subtest and a 15-item sentence production subtest. The sentences used represent a wide range of syntactic complexity carefully controlled in terms of four variables: (1) word order, (2) reversibility of the semantic functions of the content words, (3) the number of cases in the deep structure, and (4) the grammatical relation of the surface structure to the deep structure. In the comprehension section of the Syntax Test, the patient's task is to listen to each sentence read by the examiner and point to an appropriate picture out of a display of four, while in the production section, the patient is required to describe a series of pictures shown to him.

(3) **Kana/Kanji Reading Test** (Sasanuma, 1980): This test was developed to examine the patient's reading comprehension, oral reading of kana and kanji, and related abilities. The stimulus words (n=238) are controlled in terms of part of speech, frequency of usage, abstractness, word length, and configurational complexity (the number of strokes per character).

Test for Functional Communication Abilities

The first report of an attempt to assess functional communication in aphasia was made in a paper by Taylor-Sarno (1965) which discussed the concept of measuring functional communication abilities in aphasia, the outgrowth of which is a rating scale called the *Functional Communication Profile*, or *FCP*, (Sarno, 1969). A more recent functional communication

assessment tool is Holland's (1980) Communicative Abilities in Daily Living, or *CADL*. Our test for functional communication abilities in aphasia might be considered a Japanese version of the *CADL*. The test consists of 34 subtests incorporating everyday communication activities. In the testing situation, these subtest items are sequenced in such a way as to simulate a natural life situation in order to maximize extralinguistic context. A 5-point scale is used to assess the degree of communication adequacy of the patients' responses. Results yield information about the functional communication skills of individual patients that has not been sufficiently provided by the traditional aphasia test battery. The test was standardized with 200 aphasic subjects and 40 normal subjects evenly distributed among four age groups, 40's through 70's (Watamori, et al., 1987).

Comparisons between functional communication abilities as measured by this test and linguistic functions as measured by the traditional aphasia test revealed that performance levels measured by the two tests were not necessarily correlated with each other in a given patient. Some patients showed higher performance on the former than the latter, and other patients showed just the opposite, indicating relative independence of functional communication abilities for linguistic functions, and hence the need for planning and implementation of specific treatment strategies for each patient.

Treatment Programs

Goals of Treatment

The major goal of remedial procedures for aphasic individuals is to establish the most effective means of communication by which they can relate meaningfully to those around them. A variety of approaches are used to accomplish this goal depending on the nature and severity of the impairment in individual patients.

There are three broad areas of intervention which are reciprocally interrelated with each other in aphasia therapy. The first represents the traditional language therapy for aphasia, characterized by a highly structured, direct intervention aiming at the modification of specific language functions. The second area has its focus on the patient's functional communication abilities rather than his language functions per se, and uses a variety of approaches that encourage and reinforce conversational exchange of information in natural contexts. The last area is an indirect, more or less general approach to both the patient and his environment for the management of psycho-social aspects of the communication problem. The

major focus of this section will be on the first two.

Language Therapy Programs

A large variety of therapeutic approaches have been developed depending on the particular theoretical standpoint taken by the clinician. The two major methodologies which have been widely used are the "stimulation approach" (Wepman, 1951; Schuell, Jenkins & Jimenez-Pabon, 1964) and the "programmed instruction approach" (Holland, 1970). The stimulation approach is characterized by an organized presentation of controlled, intensive, and adequate stimuli to the patient for the purpose of eliciting target responses from him, which are selectively reinforced, so as to facilitate the reorganization of functions within the brain necessary for linguistic operations. The deblocking method described by Weigl (1968) may also be incorporated as a variant of the stimulation approach. The "programmed instruction approach", on the other hand, rigorously applies operant conditioning principles drawn from learning theory and draws heavily on psycholinguistic data to guide the content and order of presentation of the linguistic materials presented to the patient. Between these two extremes, however, there is a wide spectrum of approaches which differ mainly in the relative amount of structure employed. Common to all of these approaches, however, is the use of stimulus conditions to elicit optimum responses from the patient and to determine contingencies of reinforcement.

The components or levels of language which can be selected for direct application of the specific methodologies include auditory discrimination, retention and comprehension of various units of speech, word retrieval or lexical processing, syntax (comprehension and production of various types of grammatical constructions), articulation and prosody, and reading and writing.

In order to guarantee the specificity and effectiveness of the therapy programs used, it is imperative that the selection of these target areas be based on critical analyses of symptom patterns of individual patients, in such a way that an appropriate hypothesis about the nature of underlying neuropsychological mechanism(s) can be formulated.

The candidates for these direct language therapy approaches are the majority of patients with moderately severe to mild aphasia. For severely impaired patients, the major share of time is spent managing the communication environment of individual patients so as to optimize their communication potential (e.g., development of individualized nonverbal communication systems of various kinds). With patients whose aphasia is

very mild or subtle, on the other hand, it is often necessary to devise a highly individualized high-level program focusing on specific problems, such as vocational problems, that might arise as a result of the communication disorder.

Treatment Programs for Specific Functions: Cognitive Neuropsychology Approaches

As an adjunct to the multi-modality treatment approaches described above, a variety of programs aimed at working on specific functions or functional units of language (such as syntax and written word processing) have been developed and their effects evaluated (Fujita, 1976; Monoi, 1976; Sasanuma, 1980, 1986; Kashiwagi and Kashiwagi, 1978). These treatment programs are usually based on the methodology of cognitive neuropsychology and information processing models. The essence of this approach is to isolate the mental processes which can be regarded as functionally modular, and to specify the mechanism of each as well as the interrelationship among different processes. The use of this approach, therefore, allows the clinician to make inferences about the specific process(es) that might be impaired in a given patient, which in turn provides a rationale for planning step-by-step retraining procedures (Sasanuma, 1986, 1988a). The following is an example of these programs focused on the impairment of *kana* processing.

In Japanese orthography, two types of non-alphabetic symbols, *kana* (phonetic symbols for syllables), and *kanji* (logographic symbols representing lexical morphemes), are used in combination. As a result of the dual nature of this orthography, we often see in individual patients various types of dissociations between the ability for *kana* versus *kanji* processing. Impairment of kana processing, for instance, poses a major problem for patients. This is because the ability to process *kanji* which is often preserved relatively well in these patients, cannot fully compensate for the deficit of *kana* processing, since function words and predicate inflections, as well as many content words, are represented in *kana*. Furthermore, a relatively large proportion of aphasic patients exhibit various types and degrees of impairment in *kana* relative to *kanji* processing. Thus, a number of programs focused on a variety of *kana* processing deficits have been developed to meet the needs of these patients.

The standard approach to *kana* retraining uses some variants of the process models for reading and writing *kana* and *kanji* to assess and interpret impaired performance in a given patient and to develop a retraining program accordingly. The major portion of such a program is usually

devoted to the relearning of correspondence rules between *kana* and syllables, because there is evidence that the patient with poor ability to write individual *kana* characters also tends to be poor in writing *kana* words.

One example of such an approach are the *kana* writing and reading programs developed by Kashiwagi and Kashiwagi (1978), the cardinal feature of which is to use a *kanji* as a key word to form a link with each *kana* so as to facilitate re-establishing of *kana*-syllable correspondences. The goal of these programs is to help the patient to reorganize the ability to write and read individual *kana* characters and to help him use this ability to write and read *kana* words as well as sentences.

Program for Kana *Writing*

The 46 *kana* characters without diacritical marks constitute the target *kana* in the first stage of retraining. For each *kana*, a key word *kanji* is selected to form the *kana-kanji* link. The criteria for selection of the key words are: (1) the initial syllable of the key word is identical with the pronunciation of the target *kana* character, and (2) the key word should be familiar to the patient so that he can read and write it easily and can retrieve its phonological form (or can say the word as a whole) on hearing the first syllable of the word.

Table 3.
Treatment Program for Writing Individual Kana to Dictation

Step 1.	Say the key word *kaki* or *persimmon* on hearing the initial syllable of the word (*ka* ➡ *kaki*).
Step 2.	Write the key word *kanji* (柿).
Step 3.	Write the target *kana* (カ). linked with the key word
Step 4.	Gradually phase out the strategy of using the *kanji* key word.
Step 5.	Expand the ability to write the target *kana* in words and sentences.

For each *kana* character, the patient is helped to go through the five steps as shown in *Table 3*. In Step 1, the patient says the key word (in this

example *kaki* or *persimmon*) on hearing the initial syllable of the word presented by the therapist. In Step 2, he writes the key word *kanji* (柿), and in Step 3, he writes the target *kana* linked with this key word *kanji* (柿). Step 4 is the stage for gradual phasing-out of the strategy of using *kanji* key words as intermediary steps until this is done internally or omitted altogether, and Step 5, the last step, is devoted to expansion of the ability to write each *kana* character not only individually but also in words and sentences.

Program for *Kana* Reading

The program for *kana* reading also consists of five steps as shown in *Table 4*. In Step 1, the patient writes the key word *kanji* after the written presentation of the target *kana* (カ). In Step 2, he reads the key word out loud, "*kaki*", and in Step 3, he separates the initial syllable of the key word and says it by itself. Steps 4 and 5 are phasing out and expansion stages, just as they are in the program for writing *kana*.

Table 4. Treatment Program for Reading Individual Kana Aloud

Step 1.	Write the key word *kanji* after the presentation of the target *kana* (カ → 柿)
Step 2.	Read the key word out loud (*kaki*)
Step 3.	Separate the initial syllable of the key word and say it by itself (*kaki* → *ka*)
Step 4.	The same as in *kana* writing.
Step 5.	The same as in *kana* writing.

In sum, the gist of these programs is to exploit the better preserved *kanji* processing ability in the patient and use the meaning or semantic representation of *kanji* as an intermediary to reorganizing the *kana*-syllable linkage.

Three patients, two with Broca's (patients #1 and #2) and one with amnestic aphasia (patient #3), were given these programs. The linguistic examination just prior to the initiation of the program revealed that spontaneous speech was severely impaired in all patients; one or two word utterances for patients #1 and #2, and so called "empty" speech for patient #3. Both auditory and reading comprehension were functional for daily

communication in all three. Both writing and oral reading of *kana* were severely impaired in all patients in contrast to substantial preservation of the ability to read and write *kanji*. Each patient was given four to five 45-minute therapy sessions per week from 6 to 14 months.

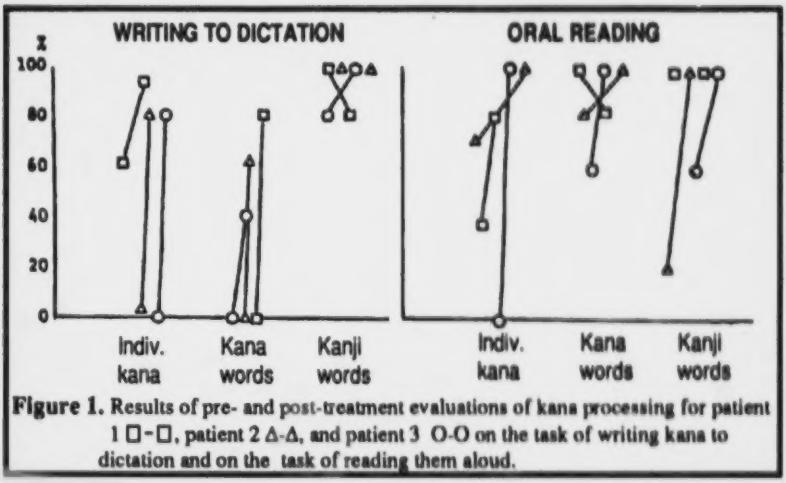

Figure 1. Results of pre- and post-treatment evaluations of kana processing for patient 1 □-□, patient 2 Δ-Δ, and patient 3 O-O on the task of writing kana to dictation and on the task of reading them aloud.

Figure 1 shows the results of pre and post treatment evaluations of kana processing. All patients significantly improved in writing and reading not only individual *kana* characters but also *kana* words (except patient #1, who showed a slight regression in reading *kana* words aloud), indicating that these programs were indeed effective.

In a subset of Broca's aphasics with a severe impairment of *kana* processing, the locus of impairment appears to be located at that level of processing where the phonological representation of the word is segmented into a sequence of syllable sized units, so that syllable-*kana* (and *kana*-syllable) correspondence rules can be re-established. Monoi (1976) has developed a therapy program focused on these segmentation procedures, as well as the *Phonemic Segmentation Test* to identify candidates for this particular program. The program has proven to be effective for selected patients.

In this section, we have had only a glimpse of some of the so-called cognitive neuropsychology approaches to language impairment in aphasia. Granted that they leave much to be desired in terms of both theoretical and technical elaboration and refinement, but they appear to offer a major breakthrough in aphasia therapy.

Treatment of Functional Communication

Recovery of the aphasic patient to the premorbid level of linguistic function is rarely achieved. Since linguistic deficits are closely interwoven with other cognitive functions as well as with a wide spectrum of psychosocial factors, a complete rehabilitation program for aphasic individuals necessarily entails a far more encompassing perspective.

This perspective is reflected in the recent trend toward increased emphasis on functional communication abilities of aphasic patients, or on fostering language use (pragmatics) by focusing on ideas and the kinds of real life activities out of which language grows (Darley, 1976). In line with this trend is the emergence of a variety of modified "stimulation" approaches based on the expansion of the original concepts (Wepman, 1951; Schuell, Jenkins & Jimenez-Pabon, 1964); the thought-centered approach (Martin, 1981), divergent semantic therapy (Chapey, 1981), PACE(Promoting Aphasics' Communication Effectiveness) based on incorporation of parameters of natural discourse (Davis & Wilcox, 1981) and functional communication treatment (Aten, 1986), among others.

Common to all these approaches is the focus on communication and information exchange in a practical sense. The major objective of intervention, therefore, is not for the patient to achieve linguistic accuracy but to improve his ability to convey and receive messages effectively in real life situations through whatever communication modalities (including nonverbal ones such as gestures) that are most functional for him at a given stage of recovery. Since the primary objective of aphasia treatment is to help each aphasic individual achieve maximal recovery of communication abilities within the limits posed by brain damage, functional communication approaches should be integrated with standard language therapy from the outset of treatment programs.

The Efficacy of Treatment Programs: Evaluation of Improvement

Improvement of Linguistic Functions

Standard procedures to document the effects of multi-modality language therapy programs consist of administering a comprehensive formal test pre-and-post treatment, and comparing the two evaluations. In general, re-evaluation procedures using a comprehensive battery take place once every three months. Parallel with these procedures, somewhat

less formal procedures to monitor progress are used in daily clinical sessions by maintaining careful records of the patient's responses to treatment tasks so as to identify subtle changes in performance.

It is difficult, however, to provide comprehensive, definitive data showing that a given treatment approach has brought about a significant change in the language behavior of the patient beyond what is expected to occur as a result of spontaneous recovery, chiefly because of the large number and complexity of the variables involved (e.g., etiologies, types, severities, and duration of aphasia, sites and extent of lesion, age, health, and psycho-social background of patients; types, intensity and duration of treatment programs, etc.). Nevertheless, there has been an increasing number of studies in recent years, which have succeeded in controlling some of the important variables, thus providing more quantitative information on the behavioral changes obtained. Some of these are large group studies without control (non-treatment) groups; others are so-called single-subject-time-series (subject-as-his-own-control) studies. An example of group studies will be given.

Fukusako and Monoi (1984b) investigated the recovery processes of 303 predominantly post-stroke aphasic patients examined and treated between 1972 and 1981 at Tokyo Metropolitan Geriatric Hospital. The age of the patients ranged from 18 years to 87 years (a mean of 59.7 years), 53% of the patients being over 60 years old ("geriatric" aphasics) and 47% being under 59 years old "'adult" aphasics). The time elapsed since the onset of aphasia for the majority of the patients was from one to 18 months. In terms of types of aphasia exhibited by these patients, there was a striking difference between the geriatric and the adult groups. In the geriatric group, the incidence of global aphasia was significantly higher while the incidence of Broca's aphasia was significantly lower as compared to the adult group. Wernicke's aphasia was extremely rare before age 39 but appeared at a moderate rate after age 40, while the peak for the incidence of amnesic aphasia was under age 39. All patients received language therapy, essentially of a stimulation approach type, 2 to 6 sessions per week, for at least 2 months. Improvement was defined in terms of the gain in the percent of the total score on the *Roken Test for the Differential Diagnosis of Aphasia (RTDDA)* (Sasanuma, et al., 1978) administered pre- and post-treatment. A patient was judged "improved" if his gain after therapy was over 20% when his initial score was lower than 50% on the RTDDA. When his initial score was over 50%, 10% was the minimum gain judged to signify improvement.

The results indicated that improvement was shown by 46% of the patients and was related to the following three variables: (1) The type and

severity of aphasia: incidence of improvement was higher for conduction aphasia and mild Broca's aphasia (with minimal comprehension deficits), followed by amnesic aphasia, moderate to severe Broca's aphasia (with comprehension deficits), Wernicke's aphasia and global aphasia. (2) The age of the patients: only 35% of the geriatric aphasics showed improvement as against 58% of the adult aphasics. (3) Time elapsed since onset: incidence of improvement was significantly higher for patients with early initiation of therapy (within 3 months post onset) than patients with a later start, apparently indicating the effect of spontaneous recovery.

Three distinctive recovery patterns identified were: Pattern 1, shown by 80% of the patients, where a plateau of improvement was reached at about 12 months after the initiation of language therapy; Pattern 2, shown by 10% of the patients, where improvement continued well beyond the twelfth month after the initiation of therapy; and Pattern 3, shown by the rest of the patients, where little or no improvement was observed. The final level of performance reached post-treatment was significantly lower in the geriatric aphasics than in the adult aphasics. Less than one-fourth of the geriatric patients reached the level of 80% or over in the RTDDA (which is considered to be the minimum level of functional language) against one-half of the adult aphasics reaching that level. Essentially similar results on improvement of aphasia are reported by other authors as well (e.g., Takeuchi, Kawachi, and Ishii, 1975, among others).

Improvement of Functional Communication Abilities

Evaluation of improvement in aphasia is not complete without documenting improvement in functional communication abilities of individual patients. The major tool of evaluation used in Japan is the *Test of Functional Communication Abilities* as mentioned above. However, since we have not yet accumulated enough patients who went through one or the other specifically designed communication intervention program, we are unable to report any definitive results concerning the efficacy of these programs at the present time.

Vocational/Social Rehabilitation and Adjustment

According to the previously mentioned series of four surveys (Survey Committee on Aphasia Rehabilitation in Japan, 1978, 1983, 1986, 1988), the number of treated aphasic patients returning to paid employment (including cases of returning to previous jobs, cases of transfer to another section within the same company, and cases of changing jobs) ranged from 12.4% to 16.2% of the whole group. For the rest of the patients, the percentage of

return-to-home was largest (49% - 56.8%) followed by that of transfer to other hospitals or institutions (9.9% - 23.4%). Similar figures or statistics of return to paid employment for treated aphasic patients are reported by Sasanuma (1975) and Fukusako, et al. (1986), i.e., 18.0% (62 patients out of 348) and 18.1% (52 patients out of 303), respectively. (The latter authors also reported the number of return to paid jobs for only those patients who were on the job just before the onset of aphasia (n=192) as being 28.1%.) Among the factors found to influence the prospect of returning to work were (1) age of the patients (the younger the better chance), (2) severity of aphasia both at the beginning and at the termination of therapy (the milder the better chance), and (3) post-onset time when the language therapy had begun (the shorter the better chance), (Sasanuma, 1972; Fukusako et al., 1986). There is no doubt that many other factors (including those which have to do directly with the employer's interests as well as the community) interact with each other in a complex manner to influence the vocational rehabilitation in each individual case.

Aphasia Peer Circles

Closely related to the topic of vocational rehabilitation is that of social readjustment, the reintegration and quality of life of aphasic persons after discharge. Partly due to the shortage of speech and language clinicians, only a limited attempt has been made at direct intervention or management of this aspect of rehabilitation by clinicians. For the last few years, however, chronic aphasic patients themselves and their spouses have started to organize community-based groups in different parts of the country. A primary objective of these groups, usually called *Aphasia Peer Circles*, is to promote *reintegration and self development through identification with the aphasic community and peer support* (Sarno, 1986). Typical activities of these groups include (1) having regular meetings of social programs and information exchange, and (2) issuing circulars with short articles on a variety of topics that are of interest as well as concern to the members of the groups. Sometimes, speech and language clinicians are invited as guests to these meetings or are asked to give informal talks. The number of these circles has increased at a rapid pace during the past few years, with a total of 86 local groups at the present time (Association of Aphasia Peer Circles, 1988).

V. ISSUES AND RECOMMENDATIONS

There are a number of issues/problems in aphasia rehabilitation facing us in Japan. There are some suggestions/recommendations also that we would like to make here for consideration for further research and development of the field. Only those of highest priority will be mentioned.

Professional Training of Speech and Language Clinicians

The first among priority issues is the need for professional training of qualified speech and language clinicians capable of diagnosis/evaluation and treatment of aphasia and related problems. As mentioned in the previous section, there is no official recognition of speech and language clinicians. According to the statement issued at a conference held last year for promoting early establishment of the certificate system for medically related speech-language-hearing clinicians, a minimum of 5,700 qualified speech and language clinicians is (estimated to be) necessary in medical settings to meet the demand for rehabilitation services for an estimated total of 900,000 patients with various types of communication disorders, including aphasia. At the present moment, a consensus among the 26 major medical associations in Japan (representing internal medicine, neurology, psychiatry, neuropsychology, and others) has been reached to present a joint resolution to the Minister of Health and Welfare requesting early establishment of a training/certification system for speech-language-hearing clinicians in medical settings. This may indicate that the long-awaited systematization of professional training and certification of speech and language clinicians as well as their official recognition will be realized in the near future.

The Need for More Systematic Research on the Nature of Interactive Variables Operating in Aphasia in Old Age

The second in the list of priority issues has to do with the effects of aging on aphasia. The world wide increase in life-expectancy in recent years has had a significant impact on the aphasic population. Accumulating data indicates that aphasia in the elderly is qualitatively different from that in younger age groups. Patients with Wernicke's aphasia tend to be older than patients with Broca's aphasia (Fukusako and Monoi, 1984a; Harasymiw et al., 1981; Holland, 1985; Kertesz and Sheppard, 1981), and the incidence of global aphasia as well as that of aphasia accompanied by dementia increase significantly with age (Fukusako & Monoi, 1984b; Holland, 1985; Takeuchi, et al., 1975, among others). Furthermore, there is evidence that older patients, but not younger aphasics, tend to show defective scores in visuospatial abilities, while the two groups did not differ significantly on linguistic test scores (Watamori, 1982).

Taken together these findings suggest the need for more systematic research on the nature of interactive variables operating in aphasia in old age. Such research will require a comprehensive evaluation of linguistic as well

as nonlinguistic cognitive performance (Benton, 1982) not only in aphasic patients but also in the normal elderly. To obtain such data, we have constructed a battery of 20 tests probing into four major cognitive areas: orientation, memory, linguistic functions, and visuospatial-constructive abilities (Sasanuma, et al. 1985). Thus far, we have administered this battery to (1) a group of healthy normal subjects (N=120) between the ages of 50 and 89 years (who were recruited from senior citizen organizations in Tokyo), as well as a group of aphasic patients (N=90) of various clinical types consisting of four age groups: under 49 years, 50-59 years, 60-69 years, and over 70 years. The results obtained from different age groups of aphasic patients are now being analyzed and compared with those of the normal subjects. The accumulation of such data on the impact of aging on higher cortical functions should be indispensable for the development of more appropriate means of evaluation and treatment of aphasic disorders in the elderly.

We have given the same battery of 20 tests to another pathological group: 110 patients with mild to moderate dementia of various types. We believe that cognitive/neuropsychological data such as these obtained from dementia patients are also invaluable for a deeper and more comprehensive understanding of aphasia in the elderly (Sasanuma, 1988b). According to Fukusato and Monoi (1984a) the incidence of post-stroke aphasia accompanied by general cognitive impairment or "dementia" increases significantly with age, accounting for 30.4% of patients in their seventies as compared to 7.8% among patients under 39 years old. Thus, elucidation of differences as well as similarities between the behavioral/neurological manifestations of aphasia and dementia is a crucial first step to the differential diagnosis of the two disease entities, as well as to treatment planning and implementation for each patient.

Implications of Technological Development for Aphasia Rehabilitation

The impact which the technological revolution has had in recent years, and will continue to have, on the whole area of clinical aphasiology can hardly be overemphasized. The application of computer technology, for instance, has brought about marked precision, efficiency, as well as versatility in various areas of aphasia rehabilitation: (1) in the analysis and evaluation of impaired mechanisms at various levels of functioning (e.g., Itoh, et al., 1980 Tatsumi, et al., 1986). (2) in the development of various types of training procedures (Seron, et al., 1980; Katz, 1984, 1986; Mills, 1986; Maruyama et al., 1987, among others); and (3) in the prediction and analyses of prognosis, or estimation of treatment duration (Matthews & LaPointe, 1981), among others.

In particular, the advent in the last decade of the fourth generation microcomputer technology, along with increased memory capacity and sophistication of peripheral devices, has considerably broadened the scope of what can be done with the technology. There is an increasing possibility that microcomputers can serve not merely as useful additions to conventional language therapy, but can even take over certain therapeutic tasks; those tasks primarily based on stimulus-response activities that characterize a linguistically oriented treatment paradigm. Improved clinical efficiency thus obtained will then allow clinicians additional time for other types of activities that are difficult to handle with present-day computers. One such example may be the functional communication therapy described above where a clinician takes the role of alternating listener-speaker engaged in dynamic interactions with the patient. In view of the increasing technological developments, as well as of growing demands for high-quality clinical services ahead of us, the application of computer technology to clinical aphasiology constitutes a vast area for further research.

International Cooperation

I believe the importance of international cooperation and information exchange on various issues of aphasiology cannot be overemphasized. There are at least two broad areas in which we can collaborate. One has to do with more or less theoretical aspects of aphasiology, while the other has more to do with practical/clinical aspects of aphasia rehabilitation. The following are examples from each of these areas:

Cross-Language Comparative Studies of Aphasia

The number of different languages existing in the world today is close to 3,000 and yet only a handful of Indo-European languages have been the major source of documentation for aphasiology. For the study of aphasia to become a truly universal science, descriptions of aphasic deficits from such limited data are clearly inadequate, as are the explanatory theories and treatment/rehabilitation procedures based on these theories (Sasanuma, 1986). As a matter of fact, there is evidence that structural variations of individual languages constitute an important variable exerting differential effects upon the patterns of aphasic symptoms. A cross-language comparative study of agrammatic narratives in 14 languages (Chinese, Dutch, English, Finnish, French, German, Hebrew, Hindi, Icelandic, Italian, Japanese, Polish, Serbo-Croatian, Swedish) has been conducted over the past few years (Menn & Obler, 1985). Some of the results obtained from Japanese aphasic patients (Sasanuma, Kamio and Kubota,

1989) in this cross-language study indicate that so-called *representative* features of agrammatic speech are not as representative as had been thought, and in fact some language-specific features do exist that have crucial implications for aphasia theory. Future research into other areas of aphasic symptomatology in a wider variety of different languages may well uncover more such features. It is only through the integration of language-specific and language-universal data that we can construct a truly comprehensive theory of aphasia, which in turn will help us develop more effective treatment procedures.

International Collaboration and Information Exchange on Aphasia Rehabilitation

This topic may be especially relevant to aphasia clinicians working in some Asian countries where aphasiology, theoretical or clinical, is in its early stage of development.

There have been some sporadic reports from some of these countries. For instance, according to Dr. Goon, a WHO representative in Beijing, the incidence of CVA's in China based on a survey in 22 rural and minority areas is quite high (an average of 43%, with a large regional variability ranging from 91% to 11%), indicating in turn that the incidence of aphasia may also be high. A paper by Dr. Wang, and others, presented at the Japan-China Stroke Conference in Tokyo in 1986 (Wang, et al. 1986) referred to the use of acupuncture for treatment of aphasia with some positive effects in four of 13 patients.

On the whole, however, very little information is available concerning the status of aphasia rehabilitation in these countries: demography (incidence/prevalence of aphasia, etiologies, sex and age distributions, etc.), clinical procedures to identify aphasic patients, availability of speech and language services to aphasic patients thus identified, types of treatment or remedial procedures used and their effects, or psycho-social rehabilitation of the patients. We would like to know, for instance, whether there is any variability in the incidence/prevalence of aphasia from country to country (and from one district to another in a given country), and if so, what the relevant factors causing this variability are. What are the indications for prescribing acupuncture to aphasic patients, and if some improvement was obtained through the use of acupuncture in certain types of aphasia, what are the underlying mechanisms for this improvement?

Indeed, there is a long list of inquiries that must be made before we can even begin to identify specific issues or areas of collaboration.

Once avenues for collaboration have been established, there is no doubt that collaborative efforts will prove to be both exciting and fruitful.

CONCLUDING REMARKS

In this paper, we reported on the history and development of aphasiology in Japan, the demography of aphasic patients, information concerning the services provided to those with aphasia, and state-of-the-art treatment procedures, as well as some issues and suggestions for future study.

In closing, I would like to express gratitude for the opportunity provided to me for preparing this report, and sincere hope that this communication marks the beginning of our enterprise to encourage and develop international cooperation and information exchange on aphasia rehabilitation.

NOTES

#1. These surveys were conducted by the Japanese Society of Aphasiology as part of its project, with the primary objective of obtaining an overview of clinico-social conditions of aphasic patients in this country. In each survey, a questionnaire was mailed to a large number of hospitals/institutions throughout the country (from 862 in 1978 to 1455 in 1987) with the response rate of from 31% in 1978 to 44% in 1987. Items included in the questionnaires were: (1) demography (the total number of aphasic patients served, etiologies of aphasia, age and gender), (2) content of rehabilitation services offered to these patients (e.g., availability of systematic therapy programs, the number of speech and language clinicians engaged in these programs, training background of the clinicians), therapy schedules (frequency and length of therapy sessions), types of therapy sessions offered (proportions of individual therapy, group therapy, counseling and guidance services, etc.), types of facilities available (individual therapy rooms, audio-visual equipment, etc., and (3) opportunities of returning to paid employment for the treated patients, among others.

Analyses and comparisons of data obtained in the four surveys over the decade indicate that there has been a steady increase in (1) the number of hospitals/institutions offering aphasia therapy, (2) the number of aphasic patients served, and (3) the number of speech/language clinicians engaged in aphasia therapy. On the other hand, the principal causes of aphasia and age, and gender distributions of aphasic patients tend to remain relatively unchanged.

#2. An overwhelming majority (95%) of these 426,000 patients are over 45 years old, while 52% (222/426) are over 65 years and 35% (148/425) are over 70 years old. This indicates that the peak age distribution of CVA patients is about a decade older than is the case with aphasic patients. Another characteristics of CVA incidence/prevalence in Japan is its great variability from one district to another. According to Komachi's study of stroke incidence covering 20 regional and occupational population groups (Komachi et al., 1984), the sex and age standardized incidence ratio for all types of strokes in Japan during the period 1975-1979 was significantly higher in farming and mountain villages than urban (or suburban) districts and fishing villages, the difference between the highest and lowest being more than four times. Since the overall incidence of strokes in Japan has continued to decrease over the past decade, the regional/occupational variability in the stroke incidence tended to narrow down somewhat, too. Nevertheless, the variability is still large and has to be taken into account in planning any surveys as well as in interpreting the data obtained from them.

#3. It is interesting to note that the age distribution for aphasic patients in two earlier surveys performed in the latter half of the 1960's has its peak in the 50's age bracket, with only 31% and 34% of the patients being in their 60's or over, respectively. In one of these surveys with 269 stroke-induced aphasic patients consecutively admitted to a large rehabilitation hospital during the period of 1965-1969, patients in their 50's constituted the largest group (38%), followed by those in their 60's (27%) and 40's (22%) (Sasanuma, 1972a). A similar age distribution was obtained in another survey with 348 aphasic patients admitted in two different rehabilitation hospitals during the period of 1964-1970 (Sasanuma, 1972b).

#4. The non-university training school was established by the Ministry of Health and Welfare in 1971 to alleviate the situation. It is a one-year program and admits 20 to 30 students who have completed four years of college study. The curriculum consists of courses in basic areas (speech science, linguistics, anatomy and physiology, medical areas, psychology, etc.) and those dealing with speech, voice, language and hearing disorders, to bring the total for all areas to 80 semester hours. Additionally, about 400 hours of practical experience are provided. Thus, as far as the content of the program is concerned, it is essentially similar to that of the typical program accredited by the American Speech-Language-Hearing Association (ASLHA) in the U.S.A. However, our program has some definite shortcomings. First, it is a one-year course with an inordinately high concentration of coursework hours. Second, it does not include an equivalent to the Clinical Fellowship Year (CFY) required by ASLHA in the United States.

Furthermore, since the majority of the teaching staff is lecturers from outside institutions, the courses tend to be less efficiently organized and integrated than the ideal.

#5. There are roughly three basic types of medical care insurance in Japan. The first is the Employee's Health Insurance Program which covers 90% of the expenses incurred by the insured and 70% for their dependents (80% for hospitalization). This program covers all employees and dependents through one of three separate funds: (1) the general "government" fund which is mainly for employees in small or medium-sized enterprises, (2) the "cooperative" fund which covers employees of large industries, and (3) the "special fund" which targets specific occupational groups such as private school teachers and employees, local government workers and seamen. The second type of medical care insurance is the National Health Insurance program. This is a form of Government sponsored contributory health insurance covering 70% for both the head of the household and other family members. It was established in 1959, primarily for those not covered by the above Employee's Health Insurance Program. The final type of medical care insurance is provided for under the 1983 Health Care Law for the Elderly and enables aged persons to join either of the above two programs on a joint-cost share basis with the government.

#6. We owe much to the *Minnesota Test for Differential Diagnosis of Aphasia* by Schuell and her colleagues (1964) for the basic idea and organization of our original experimental version of thre RTDDA.

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2

Aphasiology: Its Current Status in China

Wang Xinde

Main Characteristics of the Chinese Language

From the point of view of typology, Chinese is a unique language and is different from the inflectional ones in that each written monosyllabic character is a representational form. In the classical book *Shuowen* ("On Written Language"), the Chinese characters are divided into six categories: pictographic, synonymous, pictophonetic, borrowed phonetic, associative compounds and self-explanatory characters. In general, words are formed in Chinese by means of active basic construction units; numerous words with definite meanings are formed from a limited number of characters. The logographic (morphemic) system consists mostly of embedded constructures. The composition of characters themselves consists of basic strokes including vertical strokes, right falling strokes, left falling strokes, hooks and dots. The phonetics of the Chinese language are very complicated. In the Beijing dialect, each sound has four tones: "high", "rising", "low rising" , and "falling", but in some southern dialects, a sound has six or more tones.

History of the Study of Speech Disorders in China

In the ancient Chinese traditional medical literature, there were many descriptions of speech disorders which were closely related to cerebral strokes as well as brief clinical case reports of speech disorders. Since 1938, there has been a series of detailed clinical reports of speech disorders: a case of a left occipito-parietal brain tumor with manifest alexia and agraphia in Chinese and in English (Lyman, 1938), a case of pure alexia in Chinese (Wang Xinde, 1979), a report of three cases of alexia with agraphia (Tang Cimei, 1979), and a report of a case of pure agraphia in Chinese (Wang Xinde, Li Jin, 1981).

In 1980, some neurologists and psychologists at the Institute of

Psychology of the Academy of Sciences, Beijing Hospital, Heaven Temple Hospital, Beijing Medical University and others began to study aphasia, alexia and agraphia in Chinese. Recently, a series of papers has been published in various Chinese medical journals, which have addressed agraphia in aphasia (Wang Xinde, 1986), speech disorders in patients with cerebrovascular disease (Li Xiantan, et. al., 1986), mirror writing and the development of Chinese written language (Wang Xinde, 1986), the role of subcortical structures in speech activity, analysis of speech disorders caused by subcortical lesions in cerebrovascular disease (Zhu Yonglian, et.al., 1987), a study on speech disorders in acute cerebrovascular disease (Wang Xinde, et.al., 1988), a study on verbal fluency in patients with cerebral infarction (Xu Shulian, 1988), transcortical sensory aphasia (Gao Surong, 1988) and coordinated activities of the two cerebral hemispheres in split-brain patients (Li Xintian, 1988).

The First National Symposium on Neuropsychology was held in Kunming, Yunnan province, in 1987. Sixty-five delegates participated in this symposium and 33 papers were presented. They included 13 papers on aphasia, 11 papers on studies of memory and intelligence, and 9 papers on studies of asymmetry of function of the two cerebral hemispheres and neuropsychological assessment After the symposium the Study Group of Neuropsychology under the Chinese Society of Neurology and Psychiatry of the Chinese Medical Association, was organized. "An Outline of Assessment of Aphasia in Chinese" was published in the *Chinese Journal of Neurology and Psychiatry, No. 4, 1988.*

The Clinical Manifestation of Aphasia, Alexia and Agraphia in Chinese

The incidence and prevalence rates of Cerebral Vascular Disease (CVD) are very high in China, about 114-187 per 100,000 population and 253-620 per 100,000 population respectively. Speech disorders are identified frequently in acute cerebrovascular disease. Thirty-four percent of speech disorders are either aphasia or dysphonia with aphasia accounting for 16%. The prosodic disorders occur more frequently in cerebral hemorrhagic stroke than ischemic strokes, while dysarthria occurs more frequently in ischemic stroke than in hemorrhagic stroke. Both aphasia and dysarthria are closely related to lesion site.

The characteristics of alexia in written Chinese were as follows: First were patients who could not read the Chinese characters aloud; they self-cued by "writing" with their index finger, suggesting that graphokinesthesia can help a patient compensate for the defect of disintegration of

visual images. **Second** were patients who could not read the Chinese characters aloud, but they could read and know their meaning from their mosaic radicals (distinctive semantic features). **Third** were those patients who were more likely to read aloud the Chinese characters they wrote themselves, rather than those written by the doctor. Therefore, it appears that the process of reading the written language is closely related to the three dimensions of Chinese characters: "form", "tone" and "meaning".

Agraphia in Chinese aphasic patients with cerebral vascular disease in the Chinese language was manifested as follows: total agraphia, constructional disorders of writing, repetitive writing, pictographic writing, writing overproduction and mirror writing. Ability to copy is relatively intact in agraphia, the average score for correct writing is at 67%. This can be explained by the fact that there is no interruption of auditory and visual connections and no disturbance of graphokinesthesia, and also the requirement for visual-image memory is low. Severe agraphic disorders were seen in the process of taking dictation, naming flash card pictures and filling in blanks. The scores of correct writing were 20%, 18% and 16% respectively. These three forms of written language require a functioning auditory system, visual imaging, graphokinesthesia, and especially visual-image memory, so with the disruption of any of these, difficulties are encountered at the moment of writing.

The score for correct writing of first and last names was 68%, but the ability to write an address or the history of the illness correctly was quite low, especially the latter. The relatively high scores for correct writing of names was probably because of overlearning. When a child begins to learn Chinese characters, usually the surname and first name, a stable relationship is established in certain areas of the dominant cerebral hemisphere. In an examination of aphasic patients regarding Chinese characters of similar form, tone and meaning, the ability to write correctly was at 17%, 14% and 10%. The score for writing characters of similar form from dictation was better than those of characters of similar tone and meaning. This is related to the fact that the image takes place first in writing Chinese. In writing from memory the patients need to remember the visual image of the Chinese characters which they have seen a moment before; therefore good visual image memory is needed.

Constructional disorders in writing Chinese characters manifest as the adding or deleting of strokes. For example, a patient writes instead of the Chinese character ; instead of . These phenomena may be related to the mosaic construction of Chinese ideographs. Pictographic writing is another agraphic disorder peculiar to Chinese. If patients cannot

write the name represented by the pictures, they draw a picture instead. (Pictographs also have their place in the historical evolution of the written language: they were used more than 2000 years ago and the written language is still referred to as pictographic).

The phenomenon of mirror writing among different groups of Chinese subjects, including preschool children, school-age children, normal adults, and patients with cerebral vascular diseases has been studied. Since individual Chinese characters are often made up of constituent components (radicals) which are placed in different square spaces occupied by the characters, the Chinese language is particularly useful for examining mirror writing. It was found that mirror writing occurred more often when subjects wrote with their left hands. When learning to write, apart from establishing motor-schemas in the hemisphere contralateral to the hand used, it was hypothesized that corresponding schemas which are mirror images are established in the other hemisphere.

History and Development of the Rehabilitation of Speech and Language in China

In classical Chinese traditional medicine, speech therapy consists of two strategies. The first one is to treat the basic disease, for example, aphasia, dysarthria and other speech disorders caused by cerebrovascular diseases. Traditional therapy is used to treat and to indirectly improve speech disorders. The second strategy is application of acupuncture therapy to facilitate linguistic rehabilitation. Some of the acupuncture points used in speech rehabilitation are: Li-que, Tian-zong, Jia-che, Feng-fu, Ya-men. Sometimes, the acupuncture points, Jin-zhi and Yu-yi, in the region of the lower jaw are also used by directly stimulating the tongue in order to improve linguistic function. In the past 15 years a specific acupuncture method, called "Head acupuncture therapy" for treatment of speech disorders was developed. Acupuncturists stimulate the lower two fifths of the "motor area" for treatment of motor aphasia, "speech area No. 2" for sensory aphasia and "speech area No. 3" for amnesic aphasia.

The method of speech therapy for aphasia in Departments of Neurology in China is divided into three parts:

1. In the training of laryngeal sound production (formation),the neurologist requires the patient to phonate the sound "A" or uses the patient's act of coughing or blowing out a flame or match to utter the sound, especially the latter, because labials in aphasic patients are much easier to recover.

2. The doctor lets the patient hear the first part of a common sentence, then requires him to speak out the remaining part of it.

3. With the help of medical personnel patients who can phonate utter sounds in front of a mirror. At first they speak simple characters and phrases, following the guidance of the neurologist. Later on they speak simple characters and phrases themselves, from short and simple phrases to those which are longer and more difficult. With the aid of visual and tactile sensation they can modify the position and shape of the articulators.

Current Status of Aphasia Rehabilitation in China

Aphasia rehabilitation is provided to patients only by some neurologists in Departments of Neurology located in the large cities of China. Much attention has been paid to aphasia rehabilitation recently. In 1987, the **Symposium on Cerebral Vascular Disease in the Elderly** was sponsored by the World Health Organization at Beijing Hospital and Beijing Institute of Geriatric Medicine, the Ministry of Health. In this symposium Dr. Sumiko Sasanuma gave a series of lectures on aphasia rehabilitation to participants from sixteen provinces of China. Now, speech therapy departments in large hospitals, sanatoria and rehabilitation centers are gradually being established, especially in Beijing. The clinical experience and therapeutic results of speech therapy up to now are still not enough. The neuropsychology study group is currently beginning to design a "Program and Method of Aphasia Rehabilitation in Chinese". It is hoped that in the near future, all aphasic patients will be able to receive good aphasia rehabilitation from expert speech-language pathologists.

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3

Aphasia Rehabilitation in India

Prathibha Karanth

Background and History

Knowledge of and concern over stroke and aphasia have had a long history in India dating back to 1500 B.C. In Sanskrit books dating from 200 B.C. to 1633 A.D., detailed descriptions of Ayurveda - the Indian system of medicine - are recorded. These contain frequent references to speech disorders, including *Vaksthambha*, "the stopping of speech" due to neurological disorders, for which treatment procedures are indicated. In *Caraka Samhita*, dated at 200 A.D. for instance, it is recorded that "in hemiplegia or paralysis of one side of the body", the neural force seizes the nerves controlling the function of one side of the body and produces loss of movement, pain and *vaksanga*, "stoppage of speech" *(Caraka Samhita 6-285)*. In both Susruta's *Susruta Samhita* (SS, 1-24.5) and Vagbhata's A*stanga Hrdayani* (A.H. 3-15.31) paralysis of the tongue has been listed as one of the causes of acquired speech disorders. A more specific reference to acquired speech disorders, causes of which "include among others paralysis of the tongue and damage to the circle of Willis", is found in *Madhava Nidhana* (p. 52).

As these disorders were thought to be neurological, a medical line of treatment was advocated. Curative rehabilitative treatments were also described. Medical treatment consisted of specially prepared medicines for internal consumption such as *kalyanakaleha*, the procedures for the preparation of which are documented at length in classic textbooks of Ayurveda such as *Susruta Samhita* and *Caraka Samhita*. Curative-rehabilitative recommendations included hot baths, massages and the application of ointments, the ingredients for preparation of which are explicitly stated. Gentle squeezing of the affected limbs as well as gentle stamping with the feet were considered necessary. A prognostic note stating that "treatment which is immediate is most likely to be successful with a delay in treatment leading to a complete cure being unlikely" (Susruta Samhita, p.79) completes the description of aphasia and its treatment under the ancient system of Indian medicine called *Ayurveda*.

Ayurveda, though ancient in its history, continues to be practiced even today among a sizable section of the Indian people, particularly those who live in rural India. While for some this is necessitated by the lack of immediate access to practitioners of allopathy, for others, Ayurveda is by choice the favored school of medicine. Today it also serves as an alternate mode of treatment and hope for those who are disenchanted with the time-consuming treatment procedures and the slow progress achieved by rehabilitative medicine, particularly in such conditions as aphasia.

Homeopathy, too, has been a popular mode of treatment among a large number of people in India, though admittedly not with as long a history as *Ayurveda*. For aphasia, the practitioners of homeopathy have claimed that "not withstanding the fact that aphasia is often due to occlusion of the middle cerebral artery, it is a singular fact that many cases of the disease have yielded to homeopathic treatment. Decided improvement and in many cases, satisfactory cures have been reported from the use of belladonna, arnica, stramonium, phosphorous, glonoin, baryta, lachesis, kalibrom, causticum, lycopodium, zincum, conium and bothrope" (Porter-Hart, p. 37).

Facilities

Rehabilitation medicine within the Western allopathic tradition is relatively new to India. The rehabilitation of individuals with aphasia within this tradition can be traced back to no more than two decades ago. Much of this work is restricted to the larger specialized national medical centers in cosmopolitan cities, such as the All India Institute of Medical Sciences, New Delhi; the National Institute of Mental Health and Neurosciences, Bangalore; the All India Institute of Speech and Hearing, Mysore; the Jawaharlal Institute of Postgraduate Medical Education and Research, Pondicherry; the Institute of Neurology , Madras; the Christian Medical College, Vellore; the All India Institute of Physical Medicine and Rehabilitation, Bombay; and the Post-Graduate Institute of Medical Education and Research, Chandigarh. Rehabilitation work with aphasic patients is also carried out to a lesser extent by private clinicians in nursing homes and clinics. This, too, is restricted to the urban areas and the metropolitan cities in particular.

Staff

Diagnostic evaluations and rehabilitation of aphasic patients at these centers are generally carried out by neurologists, speech and language pathologists, psychologists and physiotherapists. Social workers and occu-

pational therapists are seldom involved. Even at the national centers it is not often that the services of an entire team is available for aphasia rehabilitation. Smaller core teams usually consist of a neurologist-speech language pathologist and/or psychologist or physiotherapist as the case may be. Very often the rehabilitative work with individuals with aphasia is carried out alone by any one of the rehabilitative team. Long term rehabilitative work, when carried out, is as a rule by the speech-language pathologist or physiotherapist with little interaction among fellow professionals. While this is in general particularly true of the private practitioners, it is often also true of rehabilitative work in day-to-day practice at the larger national centers as well.

Funding

Funding for the national centers of medicine and medical education such as AIIMS, Delhi; NIMHANS, Bangalore; PGIMER, Chandigarh and AIISH, Mysore is provided for by the Union Ministry of Health and Family Welfare, Government of India. The rehabilitative services offered by these institutions are generally free of charge to the patients, though in some instances nominal payments, dependent on the size of the family income, are made by patients. Services at the larger private institutions such as Christian Medical College, Vellore, are free for the economically poorer members of the society but are paid for by patients from the middle and upper socio-economic strata. In the smaller private nursing homes and clinics, on the other hand, all services are paid for by the patient. India does not have any parallel to the social security and public health schemes that are prevalent in Western societies such as Britain and the United States of America. Reimbursement for medical expenses, both in the public and private sectors, covers only a few of the expenses incurred for rehabilitative services.

Other Characteristics of Aphasia Rehabilitation in India

Given the constraints of an inadequate number of trained specialists and their central, usually urban, location when available at all, it is inevitable that rehabilitative work for aphasic patients is restricted to the urban populations of the larger metropolitan cities. Here too the slow long-term nature of the aphasia rehabilitation programs compounds the problem. Even when therapeutic services are offered free of charge, for a nation whose people are largely dependent upon public transportation, the distance, time, money and effort involved in availing themselves of these public services in combination with the slow progress made in therapy, act as strong deterrents to continued enrollment in rehabilitation programs and

lead to a high dropout rate.

The various rehabilitative disciplines are seldom available at a single source. Consequently even the highly motivated aphasic and his family become less enthusiastic because of having to make several trips in order to obtain the different rehabilitative services. Due to the demand for hospital beds, aphasics can seldom be kept as in-patients in hospitals for a prolonged period of time. Most aphasics are discharged from hospitals as soon as their neurological condition stabilizes, necessitating that all other evaluations and therapeutic measures be received as out-patients. Alternate residential rehabilitative centers do not exist even in the bigger cities.

Family Supports and Home Training

Given these conditions, it is only a small number of highly motivated aphasics with supportive families that have been able to reap the benefits of long-term rehabilitative programs. Family support, it must be stated, has been one of the brighter aspects of aphasia rehabilitation in India. Speech-language pathologists often work in close conjunction with a spouse or daughter for continuance and long-term success in therapeutic programs for aphasics.

In order to overcome the difficulties in enrolling and maintaining people with aphasia in long-term speech-language therapy programs, the alternative of home training programs is being given serious thought. Home training programs based on the *Linguistic Profile Test (LPT)* (Karanth 1981, 1986) are being given clinical trials at the All India Institute of Speech and Hearing, Mysore. A baseline on the LPT is established at the first instance and a family member is identified and trained in daily exercises geared towards a specific subgoal or linguistic ability. Follow-ups ranging from once a fortnight to once in 2 to 3 months, depending on the distance between the patient's residence and the institution, are scheduled and further therapeutic exercises are drawn up at each sitting depending on the patient's progress. Long-term research programs on home training for individuals with aphasia and also the feasibility of itinerant language therapy are being considered.

The need for alternate methods of retraining for specific subtypes of aphasia is also being explored, as it has been our experience that some of the specific Western methods such as *Melodic Intonation Therapy* for people with expressive aphasia, do not work very well with Indian patients possibly because of cultural factors.

Features Related to Socio-Cultural Factors

Apart from these practical aspects of aphasia rehabilitation in India, there are specific features related to socio-cultural factors that are prevalent and contribute to the complexity of rehabilitation. Important among these are the factors of multi-lingualism and illiteracy. India is a country of 800 million with more than seven hundred different languages and dialects. Of these, seventeen are spoken by sufficiently large numbers of people to earn for themselves a place in the list of official languages. It is common in India to find people, even children, who are fluent speakers of two or more languages. Schooling in India, particularly when beyond the 5th grade, necessarily entails exposure to two or more languages. This multiplicity of languages and the presence of a large number of multilingual speakers pose special challenges to aphasia rehabilitators. The multiplicity of languages necessitates the identification of a therapist who has adequate command over the particular language of the individual patient. The multilingual aphasic not only requires special diagnostic tests and therapeutic material in his several languages, but additionally poses the question of whether therapy should be carried out in one or more than one of his languages. If one; which one? And if more than one; are they to be taken up simultaneously or successively? There are seldom any straightforward, generalizable solutions to questions such as these, for the requirements and demands of individual patients vary in terms of the language or languages affected, the degree to which each or all are affected, the requirements in terms of the language spoken at home, work and in the immediate environment, and the language in which the individual is literate.

Literacy is yet another major variable to be considered in the rehabilitation of people with aphasia in India. With nearly half the country illiterate, therefore, it follows that a large number of persons with aphasia, too, are illiterate. This brings additional considerations into their rehabilitation planning. It has been our experience that as a rule the illiterate person with aphasia is generally less shattered by his/her aphasia and more able to cope with his/her speech-language deficit and re-adapt to a premorbid lifestyle, than the literate person with aphasia. At the same time, for the illiterate person with aphasia enrolled in a speech-language therapy program, the therapeutic interaction is constrained by the patient's illiteracy which makes special demands on the ingenuity of the therapist.

Advocacy

Another major gap in the area of aphasia rehabilitation in India is the lack of an organized, vocal advocacy group. To date there is not a single body of people, professional, semi-professional or non-professional, that has as its objective the championing of the cause of individuals with aphasia. While the Government of India has in the recent past taken major steps for the welfare of people with disabilities, these measures have generally been geared to meet the needs of people with congenital or developmental handicaps such as hearing impairment, visual impairment, physical impairment and mental retardation. Peripheral groups such as those persons with aphasia are yet to be given the attention they need and deserve under these welfare schemes.

Research

Research on aphasia in India has also been sporadic and scattered. The few pieces of work carried out thus far have primarily been done independently by particularly interested and motivated researchers or by research students. Rarely has it been of a sustained, long-term well-funded nature. No single center has emerged as a center of excellence for research on aphasia with a long-term commitment to research in aphasia and its rehabilitation.

Recently, a relatively substantial, inter-institutional collaborative research project on aphasia involving the All India Institute of Speech and Hearing, Mysore; National Institute of Mental Health and Neurosciences, Bangalore and All India Institute of Medical Sciences, New Delhi was initiated with funding from the Indian Council of Medical Research. Briefly, the objectives of this project are: to establish the incidence of aphasia among stroke patients in India with reference to factors such as age, sex, side of lesion, language background and literacy level; compare aphasia classification as to type and lesion location in aphasics with reference to Western literature; identify linguistic patterns among mono and multilingual speakers of Indian languages vis-a-vis the subtypes of aphasia; identify leads to developing rehabilitative programs that are language and culture specific to the Indian context and to co-incidentally develop new theoretical insights, if any emerge. It is hoped that this project will lead to a greater commitment to long-term work in aphasia in India.

Apart from the issues of aphasia and aphasia rehabilitation in a multilingual semiliterate society, language specific and script-specific features of aphasia that are seen in Indian aphasics have relevance to the

understanding of brain-language behavior relationships. These aspects of Indian aphasiology need further study.

Systematic research into the several aspects of aphasia rehabilitation within the different schools of medical thought practiced in India would be of value. Of immediate relevance and benefit would be a residential rehabilitation center for people with aphasia with representatives of all concerned professions, that could serve as a hub for aphasia research and rehabilitation throughout India.

I am indebted to Dr. S.R. Savithri and D. T. Ramprasad for having drawn my attention to the literature on aphasia and its rehabilitation in Ayurveda and Homeopathy, respectively from the following sources:

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4

Aphasia Rehabilitation in Australia - I

Alison Ferguson

Aphasia rehabilitation is in its infancy in Australia, having developed only during the last fifty years. However there has been rapid growth in both service development and aphasia research in recent years. Current trends reflect various overseas influences as well as intrinsic factors related to the Australian situation. This article focuses on the aphasic population, the providers of aphasia rehabilitation services, the service delivery models of aphasia rehabilitation, and current research trends.

BACKGROUND

Unfortunately, there is no information available as to the incidence and prevalence of aphasia in Australia. It is generally considered that Australia follows the pattern of other Western countries for pathologies resulting in aphasia: cerebrovascular accident, head injury, tumor and infection, with cerebrovascular accident as the major cause of aphasia in the older, over- 60 age group and head injury predominating in the younger, under-25 age group. As in other Western countries, Australia is experiencing a growth in its aging population (Cameron, 1984) and an increasing prevalence of aphasia from cerebrovascular accident may be anticipated.

Other features of the Australian population have an effect on aphasia rehabilitation services. First, the population in Australia is concentrated on the coastal fringe and the majority of Australians live in large capital cities, while the vast interior of Australia is sparsely populated (Cameron, 1984). Second, the Australian Aboriginal population is a cultural and language group unique to Australia. It is important to note that while the majority of the Australian Aboriginal people live in the Northern Territory (Cameron, 1984), both those living there and in other parts of Australia are in fact culturally and linguistically diverse. And third, Australia has a number of diverse ethnic minority groups with English as a second language, as a result of migration (Cameron, 1984).

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PROVISION OF SERVICES

Funding

Aphasia rehabilitation services in Australia are primarily funded through State Government Departments of Health via hospitals and some community health centers, although there is some variation between states. The Federal Government also funds aphasia rehabilitation services in the Northern Territory and Australian Capital Territory, and nationally, through the Commonwealth Rehabilitation Service which services the potentially employable 16 - 60 year age group, (Cameron, 1984). The Federal Government also funds the education and training institutions for personnel involved in aphasia rehabilitation, as well as some of the research undertaken in the field of aphasia.

This public funding allows the person with aphasia access to rehabilitation services at no personal cost. The allocation of public monies determines the availability of services, however. There are limited privately-funded services available found mainly in New South Wales and Victoria, the more populated states. Recent years have seen the emergence of self-help, volunteer-run groups, e.g. Stroke Recovery Association and Headway, which have limited or no Government financial assistance. These groups aim to provide emotional peer support particularly in the later stages of recovery, and to increase community awareness of problems and needs.

Service Providers

Aphasia rehabilitation services are provided by speech pathologists or speech therapists working in a rehabilitation team setting (Chenery and Murdoch, 1987; Clements and Wilson, 1984; Snow, 1987), along with medical and other allied health professionals, nurses, physiotherapists, occupational therapists, neuropsychologists, social workers. Speech pathologists receive their training at the Bachelor Degree level at any of the five training institutions in New South Wales, Victoria, Queensland, Western Australia, and South Australia, where post-graduate education is also available. Most speech pathologists work in the capital cities (Howell, 1978), and few are able to speak languages other than English (Georgiou and Parsons, 1988; Sjardin and Whitworth, 1986).

As speech pathologists have been the aphasia rehabilitation service providers, the development of services has coincided with the growth of the speech pathology profession. The number of speech pathologists grew

slowly: one in 1931, three in 1939, and less than 500 in 1978 (Eldridge, 1965; Howell, 1978), but has grown considerably in the last ten years. Currently there are over 1,700 members of the Australian Association of Speech and Hearing. Only 33% of these speech therapists provided aphasia rehabilitation services in 1978 (Howell, 1978). this situation seems to be improving as recent reports suggest that this figure has risen to about 45% (AASH, 1988).

Service Delivery

Speech pathology and speech therapy services developed in Australia under the influence of British models (Eldridge, 1968), but during the post-war period, American and European influences increased, and currently there is a tendency to follow American trends. Historically, there has been very little Asian/South Pacific exchange of information, but the amount of exchange has been increasing in recent years.

A team-approach to rehabilitation within a medical model of service delivery has been followed throughout the development of aphasia rehabilitation services in Australia (Bryson, 1963). Most service provision occurs within hospital settings in acute and early stages. However some longer term services are provided using a more educational, rather than medical, model through Commonwealth Rehabilitation Services for the employable age group. Recent years have also seen some longer term services available within a community health model, e.g. in the provision of domiciliary services (Hoenig, 1986). Rehabilitation services for childhood acquired aphasia are extremely limited (Morse, 1987; Jordan et al, 1988).

Conditions in Australia have also promoted the development of a consultancy model of service delivery which has emerged due to distance problems and a longstanding shortage of speech pathologists and therapists. (Australian Health Manpower, 1975). Howell (1978) found that 69% of the clinics saw patients from 50 miles away, and 40% of the clinics saw patients from as much as 200 miles away. The concentration of speech pathologists in the capital cities has meant that aphasia rehabilitation services for people living in country areas tends to be restricted to major country centers. The Northern Territory in particular has extremely limited speech pathology services available (less than 1% of the total number of speech pathologists in Australia, AASH, 1988), which also affects services available to the Aboriginal population. Also, the assessment and treatment of patients with English as a second language requires speech pathologists to work through interpreter services, which frequently necessitates departure from the provision of intensive, direct therapy to the patient, and instead the provision of family and staff education and counseling (Bevings-

ton, 1985). Such a service direction has been built on an historical focus seen in earlier reports by Australian speech pathologists which places considerable emphasis on family support and counseling (Hooper, 1977). On the other hand, there has been little development of the use of trained volunteers which has been used well in Britain and New Zealand (Washington, 1984).

Assessment

Speech pathologists working within any of the above services delivery models use a variety of assessment procedures to evaluate the communication of their aphasic patients, incorporating information from medical and social history, patient and relatives and other staff, with observation and interpretation of the patient's language performance utilizing standardized (norm-referenced/criteria-referenced) and non-standardized (criteria-referenced) procedures.

Commonly used tests include the *Boston Diagnostic Aphasia Examination* (Goodglass and Kaplan, 1983), *Western Aphasia Battery* (Kertesz, 1982), *Porch Index of Communicative Ability* (Porch, 1981), and *Communicative Abilities in Daily Living* (Holland, 1980). The applicability of the American normative data and some specific test items on these tests to the Australian population has been challenged (Dodd and Rolan, 1984; Kirkpatrick, 1974; Warms, 1986), but there continues to be little Australian normative data available. The *Queensland University Aphasia and Language Test* (Dornan et al, 1982; Leatch et al, 1973) is the only available published standardized test developed with norms in Australia. This test is not widely used, however. Some other tests, for example the *Mt. Wilga High Level Language Test* (Christie et al, 1987) are in the process of development and are used clinically in some states.

Many speech pathologists/therapists also routinely carry out some form of linguistic analysis of pragmatic, discourse, semantic and syntactic abilities, utilizing such approaches as those outlined by Crystal et al, 1976; Crystal, 1982; Damico, 1985, 1988; Prutting and Kirchner, 1987; Ulatowska and Bond, 1983. Many speech pathologists/therapists also develop and use investigative probes based on work within a cognitive-neuropsychological framework (Coltheart et al, 1987).

As can be gathered from the above brief sketch of assessment procedures, there is a diversity of theoretical frameworks motivating Australian speech pathologists' assessments of aphasia. It should be noted that such a list obscures the earlier, but still significant, influences on Australian

speech pathologists' approaches to assessment of the work of Shuell (1973), Taylor-Sarno (1965), and Luria (1970). There has been perhaps less influence of the neurolinguistic approach (Peuser, 1984) in Australia than in Europe, despite earlier influences from the work of Jakobson (1973), which may be due to the lack of English translation of more recent work within this framework.

Treatment

Specific treatment procedures for aphasia are less frequently reported than investigative approaches, as is also found internationally. However, drawing from the research literature and conference presentations, it appears that the use of broad treatment approaches such as stimulation (direct and indirect) and compensation is widespread. It should be noted that speech pathologists working within assessment frameworks as outlined above, implement such general therapy approaches in diverse ways.

An indirect stimulation approach may incorporate the provision of services such as general purpose socialization groups and social activities. This approach received attention in earlier Australian literature in the field, but is currently viewed as more appropriate to the purposes of self-help groups; e.g. for social integration and morale-building. However, the speech pathologist's role as initiator/facilitator and consultant to such groups continues to be considered an important part in the provision of aphasia rehabilitation services (Foden, 1986; Pemberton and Turnbull, 1979).

Direct stimulation approaches include therapy provided within such divergent theoretical frameworks as behavior modification and the various neuropsychological approaches. Behavior modification is not widely accepted as appropriate as the sole therapeutic approach to be used with individual patients (Packman and Ingham, 1977), but many speech pathologists integrate general behavioral principles in designing treatment utilizing other approaches, e.g. compensation training for relatives (Packman and Ingham, 1978). Also, behavior modification methods are seen as an important tool in working with aphasia caused by head injury. Direct stimulation approaches are also used by speech pathologists providing specific language stimulation in the acute stages following onset of aphasia utilizing Schuell's stimulation approach (Duffy, 1986). Still others systematize such an approach by PICA-based therapy (Porch, 1986). There has been an emerging interest in direct stimulation therapy based on the work of the cognitive neuropsychological framework (Coltheart ,et al, 1987) over recent

years. Although a linguistic base for direct stimulation approaches has been advocated for many years, Hooper (1977) calls for greater use of a linguistic base to continue (Armstrong, 1987b; Lambier and Parsons, 1986).

Treatment which focuses on compensation for aphasic deficits, particularly by the use of relatively intact communicative strengths, often is described by the term *functional therapy*. The more recent increase in awareness of pragmatics has provided further definition and extension to this approach. This general approach to treatment which is in use throughout Australia (Green, 1982, 1984) includes intervention for specific areas, such as the use of gesture (Stuart-Smith and Wilkes, 1979). While such an approach may be introduced at any time in the course of recovery, it is most frequently utilized in more chronic stages of aphasia. As previously mentioned, the education and training of relatives and staff is seen as an important aspect of a compensation approach to treatment (Bevington, 1985).

In addition to these general treatment approaches, some speech pathologists working in Australia are trained in specialized treatment methods, such as Amerind gesture training (Skelly et al, 1974). Few Australian-designed treatment methods for specific areas related to aphasia have been published, although Hill's (1978) treatment for verbal dyspraxia is widely known, and a computer-based memory treatment program has recently become available (Barnes and Schofield, 1987).

Australian speech pathologists share with other overseas aphasia rehabilitators a concern for the issues involved in generalization of the effects of treatment (McMullen, 1984). In particular, the need to design and plan for generalization of treatment gains is widely recognized.

Overall, the diversity of aphasia treatment approaches employed in Australia matches that shown in assessment approaches. Most speech pathologists consider it desirable to be eclectic in determining the most appropriate approach(es) to use in evaluation and treatment of the individual aphasic patient from an holistic perspective, thus adding to the diversity of approaches.

Efficacy

As has been widely discussed in the aphasia literature, the issue of efficacy of aphasia rehabilitation has been obscured by the focus of past research on whether treatment *(any or all)* has an effect *(variously defined)* on the communication skills *(variously defined)* of *(any or all)* aphasic patients

(Wertz, 1987). While there have been no group studies attempting this line of investigation in Australia, overseas reports have generated considerable interest and debate.

The more recent trend advocating the use of single case research design (with replication) to address the more appropriate questions as to specific and relative treatment effects for specific aspects of aphasic disorders appears more likely to add to useful knowledge in this area (Pring, 1986). However, such single case research into efficacy issues is still in the process of development in Australia.

THE FUTURE

The background of primarily publicly funded provision of aphasia rehabilitation services is likely to be continued in the future, however, changing political climates at both federal and state level swill influence the extent to which different models of service delivery are utilized; for example, any funding reductions may further promote the already established consultancy model of service delivery. In addition, the trend seen in the more populous states toward privately-funded aphasia rehabilitation services is likely to spread to other states.

Based on past trends, one would expect that aphasia rehabilitation in Australia will continue to be very much in touch with, and influenced by, overseas developments in the area. However, there has been a steady growth in recent years in the number of speech pathologists developing highly relevant aphasia research programs in different parts of Australia (for example, Armstrong, 1987a; Chenery, 1987; Kirby et al, 1988; Murdoch, et al, 1986, 1988; Lambier and Parsons, 1987; Sheard, 1987; Warms, 1988; Wayland, 1986; Wayland and Taplin, 1985; Worrall, 1988). This expanding research base points toward the development of increasing independence and continued diversity in aphasia rehabilitation in Australia.

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Aphasia Rehabilitation in Australia - II

Jennifer Lambier

The major responsibility for aphasia rehabilitation within Australia lies with the profession of speech pathology. Training for service provision in this area occurs as part of an undergraduate degree program specializing in the prevention, assessment and remediation of communication disorders.

In order to provide as comprehensive a picture as possible of rehabilitation services for individuals with aphasia in Australia, the following discussion has been arranged under four major headings. These include a description of the models of service delivery currently utilized within the aphasia rehabilitation arena, an overview of the treatment goals and outlines of the assessment modalities and treatment approaches utilized by speech pathologists in establishing treatment programing for the individual with aphasia.

Models of Service Delivery

Service delivery for individuals with communication disorders varies according to the governmental department involved and the population served. Under the auspices of the Department of Community Services, service delivery for communicatively impaired populations has been largely deinstitutionalized. The direction has shifted to the establishment of regional centers which service the immediate vicinity with an emphasis on home-based programs. In addition, active involvement by clients in planning their own treatment programs is increasingly encouraged.

The responsibility for aphasia rehabilitation following stroke, however, has remained within the Department of Health. Services are thus largely hospital-based with rehabilitation services mirroring an acute care medical model. Consequently, clients may be transferred from acute care general hospitals immediately post-trauma to specialist rehabilitation hospitals where they may receive a daily inpatient rehabilitation program. Alternatively, if physically able to manage, clients may be discharged home and attend therapy on an outpatient basis. Self-support "stroke clubs" are

available in a number of areas where individuals with aphasia and their families can meet socially and discuss relevant issues or concerns. While there is a growing awareness of the need to establish more home-based programs and investigate possible usage of telecommunications and computer technology in program delivery, moves in this area are in their infancy.

Treatment Programing Goals

Within the rehabilitation environment, treatment programing for an individual with aphasia is generally established via a multi-disciplinary team approach. Trans-disciplinary team work can be seen in some regional assessment teams which assess the elderly disabled in their homes and in some rehabilitation centers for the head-injured, but this rarely occurs in the rehabilitation of the individual with aphasia.

Within the multi-disciplinary team approach, communication programing has remained the responsibility of the speech pathologist. Such programing for the individual with aphasia is generally based on an amalgamation of different therapy approaches to ensure a program that is directed toward fulfilling clients' communication needs while simultaneously maximizing their communication capabilities.

Goals are twofold: (a) restoration of normal communicative function through intersystemic and intrasystemic re-organization as proposed by Luria (1970) and (b) compensated communication whereby strategies are devised for utilizing intact communication skills, such as gesture, to maintain communication success though not necessarily linguistic "normality".

In order to fulfill basic communication needs and maximize communication capabilities, assessment and remediation must cover cognitive, linguistic and pragmatic domains.

Assessment

While the therapeutic focus in Australia is across cognitive, linguistic and pragmatic functioning, assessment techniques utilized are rather fragmented in their coverage of all areas of communication functioning. Standardized aphasia batteries still form the backbone of assessment in the aphasia area. Consequently, there remains a bias towards assessment of linguistic functioning independently of cognitive and pragmatic function.

Traditional aphasia batteries utilized for linguistic evaluation may include the *Boston Diagnostic Aphasia Examination* (1983), Jon Eisenson's *Examining for Aphasia* (1954) and Hildred Schuell's *Minnesota Test for the Differential Diagnosis of Aphasia* (1965). Selected subtests may be administered and qualitative as well as quantitative data is used to diagnose the nature of the linguistic disorder and the differentiation of cognitive from linguistic deficits.

In general the information gleaned about a client's level of performance from one of these test batteries is used only as a guide to the general areas of cognitive, linguistic or pragmatic deficit. Further assessment is often necessary through informal means or adaptation of tasks utilized in research papers in the area.

Cognitive assessment is consequently carried out separately using a variety of neuropsychological tests. Speech pathologists usually liaise with neuropsychologists, where available, in the assessment of cognition. Additional information regarding linguistic function may be sought via semantic, syntactic, phonological and pragmatic analysis based on spontaneous speech samples. The extent to which these analyses are utilized varies, however, from clinician to clinician and state to state.

Once assessment has been completed, classification of aphasia occurs using a combination of the Wernicke-Lichtheim model with which neurologists are familiar and Luria's aphasia taxonomy (1970). Aphasia classification remains an intrinsic step in aphasia rehabilitation work, not because of its value for therapy programing but because of the strong medical bias pervading rehabilitation institutions.

Remediation

The decision to focus remediation on cognitive, linguistic or pragmatic functions appears to be determined by consideration of a number of factors including, among other prognostic variables, the immediate communication needs of the clients, the severity of the disorder, time post-trauma and degree of family support. The entire functioning of the individuals within their own environmental contexts is thereby considered.

The dynamics of a possible interaction of the above factors during remediation could be illustrated through that of a 68-year old individual who is apraxic and 3 years post-trauma. For this individual, pragmatic training would be more likely to be targeted for treatment due to the severity of the disorder and the time post-trauma. The overall aim, in this

case, may be facilitation of successful use of intact communication systems (such as gesture or drawing) for daily conversational exchanges. In contrast, a 52-year old individual who has a mild expressive anomia and who is only 3 months post-trauma might be targeted for reorganization of linguistic systems as the major therapeutic focus.

When considering remediation of linguistic function, the therapeutic approaches adopted throughout Australia generally reflect an emphasis toward structured remediation targeted at specific impairments rather than the less structured stimulation approaches advocated by Schuell (1964). Luria's (1970) theories of language dysfunction following brain damage have had a strong influence on the adoption of this therapeutic approach. Luria's moves toward establishing an understanding of the breakdown in the psychological processes underlying language function have provided speech pathologists in Australia with a model for remediation. This model aims to identify and remediate the impaired process underlying a particular receptive or expressive language deficit. The more general receptive/expressive and motor/sensory distinctions for language function and treatment programing have thus given way to a cognitive neuropsychological approach to goal setting in treatment.

To date, therapeutic goals in Australia have been, in part, determined by the theoretical model of aphasia proposed by Luria (1970). This model suggests that language functions, such as auditory comprehension, are the result of the operation of complex neuronal networks situated across different brain structures. Luria termed such networks ***complex functional systems***. The logical consequence of such an approach is that disrupted functioning of one or more of the component neuronal structures affects the functioning of the entire system. An example of such a disruption was Luria's proposal that impaired auditory-perceptual processing affects auditory comprehension. Using Luria's model of language function, auditory perceptual skills were thus seen as a component process underlying auditory comprehension which, if impaired, would seriously affect comprehension ability. In such a case, therapeutic goals were clear; i.e. remediation of auditory-perceptual skills.

While recent research has questioned the validity of certain of Luria's assumptions, speech pathologists have continued their preference for this approach to the remediation of aphasia. Indeed new models of "normal" language function are being developed against which language breakdown in aphasia can be tested. Consequently, instead of reporting, for example, global measures of disruption in auditory comprehension, more specific investigation of perceptual, semantic and syntactic aspects of

comprehension have been undertaken (Baker, Blumstein & Goodglass, 1981; Blumstein, Baker & Goodglass, 1977; Goodglass & Baker, 1976; Tun, Lambier, Doyle, Brown & Bench in preparation). It must be noted, of course, that an approach to remediation based on component process retraining is only as valid as the model upon which it is based and will, given the preliminary nature of some of the models proposed, still fail to account for some of the behaviors noted in aphasia.

An additional limitation of current models of language function in the cognitive neuropsychological field is the failure to incorporate the dynamics of the interaction across cognitive, linguistic and pragmatic functions. The limitation of a treatment approach based on a model delineating only linguistic functions becomes readily apparent when working in the aphasia rehabilitation field. Consequently, other approaches such as *Melodic Intonation Therapy, gestural training* and *PACE therapy*, among others, need to be adopted according to the therapeutic emphasis. Thus, if assessment of a particular client's communication needs and capabilities suggests that functional communication success is the primary goal, then treatment programing will focus on alternative means and strategies of communication practiced across different contextual environments. Family training for communication with the aphasic patient plays an integral role in the therapeutic process within this framework.

Attention to the pragmatic areas of language behavior is not seen as inconsistent with the cognitive neuropsychological approach to remediation in aphasia. Indeed, the use of intact communication systems is, itself, a component process in communication. Thus, establishing efficient use of intact communication and newly restored communication systems simply adds another dimension to treatment. This dimension addresses the issue of generalization and maintenance of skills taught in the clinic relative to the real life communication environment.

Summary and Final Comments

In summary, the therapeutic process can be seen to involve: a) identification of the missing components in a client's cognitive, linguistic and/or pragmatic functions; b) identification of intact components in cognitive, linguistic and pragmatic functions (for example, gesture); c) retraining of the missing components within a structured clinical environment utilizing intact components or the development of compensatory strategies which circumvent the missing compnent and d) practicing using these new reorganized systems and/or intact systems across different linguistic and extralinguistic contexts.

An example of a possible application of this approach using a psycholinguistic model for object recognition (Riddoch, Humphreys, Coltheart, and Funnell, 1988) might include the retraining of object naming. Riddoch et al. (1988) propose that objects are recognized via access to a structural memory store, consisting of actions and perceptual features associated with objects, and a nonmodality-specific semantic memory store consisting of abstract learned information surrounding an object. The model also suggests that access occurs both to and from these memory stores (i.e., bidirectionally).

Applying this model to a client who presents object naming difficulties allows assessment of the integrity of both structural and his semantic memory stores. It may subsequently be discovered that a particular patient's access to semantic memory store is disrupted and that this underlies the naming problem. Remediation may then focus on re-establishing the integrity of the functioning of the semantic storage system by providing a strategy to facilitate semantic access. Such a strategy may involve having the patient systematically delineate for each object its superordinate category, and associated contextual information like its use and other relevant learned information about that object. Semantic access is thus systematized at a conscious level.

Of course, to use this method, speech pathologists require a detailed understanding of normal models of language and a clear representation of the strategies that they are teaching to a client with aphasia. (Personally I have found that with this knowledge, the specificity and clarity of my instructions and feedback to the client is greatly enhanced. With this enhancement, learning by the client is facilitated).

An additional reason a cognitive neuropsychological approach is appealing for therapy lies in its ability to account for variation in performance across aphasic individuals. An individual's language deficits can be explained in terms of which component process is malfunctioning. As suggested above, therapy can then either target the component for possible retraining or attempt to reorganize the language functions affected by circumventing and compensating for the malfunctioning component.

In comparison, syndrome analysis in aphasia, while providing a useful global overview of language-brain relationships, falls short of providing the detail regarding language function necessary for treatment programing. Traditional taxonomies also fail to account for the heterogeneity between subjects classified within the same taxonomy (Marshall, 1986).

While current psycholinguistic models of language function are still rudimentary, it would appear that these models provide promise for understanding the complex interplay between cognitive, linguistic and pragmatic functions in language behavior. Once this interplay is better understood, we may find that books on aphasia rehabilitation no longer have separate chapters on *pragmatic* approaches, *alternative* approaches or *specific* approaches to treatment. Instead we will see how they all combine toward establishing a holistic approach to aphasia rehabilitation based on a totally integrated model of "normal" communicative behavior.

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5

Aphasia Rehabilitation in New Zealand

Ellie Glazer

Brief Overview of New Zealand and Its Health Delivery System

New Zealand is a Commonwealth country located approximately 1,300 miles east of Australia in the South Pacific. Its population of 3,311,000 (New Zealand Census, 1986) is distributed unequally over two islands, the North Island and the South Island. Despite its reputation of being a rural land of 3 million people and 50 million sheep, most New Zealanders live in urban centers. One-third of the population lives in Auckland; another third resides in Wellington, Christchurch, or Hamilton. The remaining third are spread out over the rest of New Zealand. Despite the concentration of population in urban areas, any consideration of health care delivery must also take into account the inaccessibility of many of the rural areas.

Culturally, the overwhelming majority of New Zealanders have their origins in the United Kingdom. Indigenous New Zealanders, the Maoris, make up 12.4% of the population, with Pacific Islanders, mainly from the islands closest to New Zealand; e.g., Western Samoa, Tonga, Niue, Fiji, and the Cook Islands, representing an additional 2.6% of the population (New Zealand Census, 1986). The health care system has been dominated by *Pakehas* (whites), but now a bicultural approach to health care is consciously being promoted.

Until recently, New Zealanders have considered health care a basic right that should be provided to them by the government. The Department of Health is at the apex of the health care delivery system. The Director General of Health is directly responsible to the Minister of Health who is an elected Member of Parliament appointed to this position by the Prime Minister. At present an amalgamation of the various aspects of health care is occurring which will unite the "preventative services", which have been under one Department of Health administrative structure, and "hospital services" which, although part of the Department of Health, have been part of a "Hospital Board" administrative system.

Prior to the transitional period there were 29 Hospital Boards throughout New Zealand. Eight or nine Area Health Boards are anticipated when the transition is complete. Each Hospital Board/Area Health Board has considerable discretion to establish services in its area. Some Hospital Boards/Area Health Boards have not considered it essential to provide speech-language services for adults. More direct input from the community and voluntary agencies is envisaged in the new structure but it remains to be seen how decisions will be made. In both systems funding originates from the Central Government.

New Zealand has a strong General Practitioner system. Visits to a G.P. are partially subsidized by the government but fees have risen sharply over the past ten years, with some G.P.'s charging NZ$27-28 per visit. Changes have been proposed to make doctors' fees more affordable. Prescription drugs are highly subsidized as are most laboratory procedures. Specialist doctors are based at public hospitals. Patients do not pay for consultations or for any aspect of care that is obtained from the public hospital.

Most CVA patients are admitted to "General Medical Wards" in public hospitals and receive basic medical and nursing care, and, if appropriate, rehabilitation services. Neurological assessment or C-T scans are not routine. There is also a private health system in New Zealand, which has developed because of the long waiting lists for consultations and surgery in the public system. However, only a small number of CVA patients are admitted to private hospitals for acute or rehabilitative services (no data available).

Medical insurance coverage costs are low in New Zealand as compared to the U.S. Despite this fact, fewer than 60% of the New Zealand population carry medical insurance. (Smith, P., 1988)

Epidemiological Data on Cerebrovascular Accidents (CVA) in New Zealand

Prior to the *Auckland Region Coronary or Stroke Study (ARCOS)* 1981-82 (Bonita et al., 1987), the only data relating to the incidence of CVA in New Zealand were the Department of Health statistical data. These data identified only the number of individuals hospitalized each year because of CVA, and did not include figures on non-hospitalized people who had cerebrovascular accidents.

The ARCOS data, collected in a 12-month period (1981-82), indicated 1360 CVAs in the Auckland region. These data, collected both from hospital admission records and from General Practitioners, showed that 33% of the patients who experienced CVAs during this period were not hospitalized and that four fifths of the care of these patients in the first year following a CVA took place at home or in private institutions (Bonita et al., 1987).

ARCOS data revealed 272 individuals or 20% had speech problems requiring therapeutic intervention (Bonita and Anderson, 1983). Extrapolated to a 1987 New Zealand base, the ARCOS data suggest that there were approximately 5,500 strokes in New Zealand in 1987, involving 1,100 new CVA patients (hospitalized or not) requiring speech therapy (Heine, 1981). These data are reasonably compatible with an estimate made by M. Heine, using Department of Health statistics, of 931 people with stroke throughout New Zealand requiring speech therapy in 1980. The Heine data did not include non-hospitalized CVA patients (Heine, 1981).

Overview of Speech Language Therapy in New Zealand

There is no definitive history of speech therapy in New Zealand but memoirs of Marion Saunders, one of New Zealand's earliest speech therapists, clearly indicate that the profession in New Zealand had its roots in the education system in Christchurch (Saunders, 1971). Special classes for children with speech problems were initiated in the four main centers in the 1920's. These segregated classes were taught by specialist teachers (with no specialized training) who were expected to provide individual help for all the speech impairments as well as teach the normal curriculum to the class as a whole.

A training program for speech therapists was initiated in 1942 (for three students!) at the Christchurch Teachers College. ("College" does not mean "university" in New Zealand.) This program was modeled after the Association of Speech Therapists (London) program. Initially the one-year program was designed for students who had completed a two-year course in primary teaching. (In New Zealand, teachers colleges are training institutions; teachers obtain certificates and/or diplomas, not degrees.)

In 1967 the course was modified to include the initial year for primary teacher training and two years of speech therapy training. It was at this point that an introduction to adult work was included in the training program, apparently because Education Boards were being requested to

provide a service for communication to impaired adults (Ministry of Education, 1978). As of 1989 a 4-year generic Bachelor of Education program will commence at the University of Canterbury (Christchurch).

With the development of the training program came also the development of the Speech Clinic, a separate building at one primary school, but serving the needs of the children in a defined geographical area. To date there are approximately 165 therapists employed by the Department of Education to provide speech-language services to children (University of Canterbury Chronicle, 1987).

Speech-language services for adults were slow to develop in the health sector. In 1966 there were three part-time therapists working in the hospitals in Auckland and isolated part-time therapists in other centers. By 1988, the number of therapists had increased to approximately sixty, many of whom work part-time. Estimates of a sufficient number of therapists needed for adult work vary, but the current existing number is far below any estimates and there are still hospital/area health boards without speech-language therapists. (Bonita et al., 1987; Bell and Taylor; 1988; Heine, 1981). (*See Appendix for 1983 data on employment of speech therapists throughout New Zealand*). Private practice speech-language therapy is uncommon in New Zealand particularly for adult patients.

Current Provision of Aphasia Rehabilitation

Clearly, the extent of aphasia rehabilitation is highly dependent on the availability of speech-language therapists. Although there has been some increase in therapists since 1983, there are still some areas in which communication-impaired people with stroke might not receive any rehabilitation or who receive only a minimal amount of treatment.

The location of treatment varies. Most hospital-based therapists have a "clinic" or room where they see patients. Obviously some part-time therapists only have temporary access to a room. Referral to the Speech-Language Therapist is through the medical team. In the centers with more reasonable staffing number; e.g., Christchurch, and Auckland, some suitable patients may be seen three to five times per week. Palmerston North Hospital has New Zealand's only complete rehabilitation unit. Aphasic patients in this area may receive a more intensive treatment program.

Treatment provided is dependent on the background and experience of the therapist doing the treatment. Many therapists are New Zealand trained, but a significant number have overseas qualifications; e.g., British,

Australian, American, South African, or Canadian. All use "western" assessments, treatment methodologies and materials. There is no overall system of accountability, so therapists use their limited time as they feel is most appropriate.

Length of hospital stay for stroke patients varies considerably throughout New Zealand. Some patients are involved in rehabilitation programs as in-patients, some attend as Day Ward patients and some as outpatients. "Day Wards" are generally intended for geriatric patients but it is also common for CVA patients under 65 years old to attend, particularly if they are receiving more than one therapy.

Domiciliary/home-based speech-language therapy is an option for patients in Auckland, and to a lesser extent in Christchurch. The one Christchurch Extramural (Home Care) therapist does provide some individual treatment in homes, but this is not the major focus of this position. The Christchurch therapist is involved with Stroke Clubs as well as in education, related to increasing an awareness of the special needs of the people with communication impairment in the community.

In Auckland six (Full-time Equivalent) (FTE) speech-language therapists of the 15.6 FTE therapists employed by the Area health Board to treat adults are extramural/home care therapists. At least 70% of the caseloads of the extramural speech-language therapists consist of CVA patients. While the majority of CVA patients have received some speech-language therapy as in-patients and/or as outpatients, there are some patients with aphasia who receive all treatment in the home.

A Strong Stroke Support Network: *Counterstroke*

Because of the large areas covered by each extramural therapist, highly intensive treatment programs have not been possible. These therapists have utilized a functional and environmental approach, aiming to optimize function in natural settings. The extramural therapists are well-supported in their work by a full team (minus psychologists) of home care professionals. In addition to professional assistance, the long term care of individuals with aphasia in Auckland is aided by a strong stroke support network.

The core of this network is *Counterstroke (Auckland) Inc.*, the local branch of *Counterstroke New Zealand, Inc.*, the national organization for stroke people since 1981. Attached to *Counterstroke (Auckland)* are 18 Stroke Clubs that meet weekly in most cases and are attended by many people with

aphasia and their families. Meeting in community centers, the clubs are organized and run by a combination of spouses of people with stroke, field officers and volunteers. Extramural therapists have been involved with the clubs in an advisory capacity.

Counterstroke (Auckland) now employs three full-time, one part-time and four volunteer field officers, who are available to provide information and support to stroke families. As some field officers are also Stroke Club organizers, they are often involved in a long-term capacity with aphasic patients.

Through *Counterstroke*, often in conjunction with professionals, families of aphasics may participate in carers' support groups. Some hospitals also have support and information groups for in-patient families. Additionally, *Counterstroke (Auckland)* runs seminars and workshops, organizes trips for stroke families within New Zealand, to Australia, and to the U.S.A., as well as offering separate activities for younger stroke patients.

A special aspect of the *Counterstroke (Auckland)* network that is available to aphasic patients is the Volunteer Scheme for Communication Impaired Stroke People. Inspired by the *British Volunteer Stroke*, this scheme provides trained volunteer support for many aphasic patients under the care of the Auckland area speech-language therapists. Some people with aphasia are matched on a one-to-one basis with a volunteer who visits weekly, providing "knowledgeable befriending" and in some cases assisting patients with work left by the speech-language therapists. There are also groups for aphasic patients, either conversation groups which meet in patient's homes or community settings or more structured communication skill groups which meet within the Stroke Clubs. These groups are organized by local extramural speech-language therapists (in conjunction with the paid organizers of volunteers) and led by trained volunteers. Other groups associated with the scheme are more activity-based, using, for example, crafts or bridge as the focus for social and communicative interactions. For many aphasic families in the Auckland area this active network provides not only an opportunity for on-going support and advice but also an alternative social life.

Formal re-assessment is not an aspect of treatment for aphasics in Auckland, but re-assessment and consideration for additional formal treatment often result from re-referral initiated from the stroke network. No research has been undertaken as yet, but this strong emphasis on the education and care of people with aphasia in their homes, combined with utilization of the stroke network seems to be very beneficial to people with aphasia and their families, helping them to a relatively normal life style.

Conclusion

The health care system in New Zealand is undergoing major changes. The educational and social welfare systems are also being modified. At this point it is not clear how these changes will affect the treatment of aphasic patients. Because of an increased emphasis on more input from the community and voluntary groups in making health care decisions, minority groups such as communication impaired stroke people may have more opportunity than at present to express their needs and concerns. *Counterstroke* should have an opportunity to become a strong advocate for people with stroke within the proposed system.

The documents and publicity related to the new Area Health Board system emphasize the need for community-based health care delivery. This should ensure the continuation of the *Counterstroke* network in Auckland and encourage development of similar networks in other population centers.

The opportunity to advocate for more speech language therapists in general and for funding for more extramural/home care therapists may be increased under the new system. Until there is more funding for Speech-Language Therapy services for adults *throughout* New Zealand, treatment of aphasia will remain dependent on which geographic area a patient lives in.

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Appendix

Table 1

Actual Number and Full-Time Equivalent (FTE) Number of Speech Therapists working for the New Zealand Area Health Boards (from: F.G. Bell and G.D.S. Taylor. "In a Manner of Speaking: Speech Therapy for Adults in New Zealand". Paper distributed by Counterstroke New Zealand, Inc., 1988, p. 5.

Ashburton	0.4 FTE (i.e., 16 hours per week), 1 person 9.5 FTE (i.e., Aucklanda full-time therapist equivalents and 1 working 20 hours per week), 13 persons, 1986 20 persons, 3 vacancies
Canterbury	9.0 FTE, 1986 12 persons, 2 vacancies
Cook[1]	Nil
Dannevirke	Nil
Hawkes Bay	2.0 FTE, 2 persons
Maniototo[2]	Nil
Marlborough[3]	0.8 FTE, 1 person
Nelson	1986 1.0 FTE, 1 person
Northland	0.7 FTE, 1 person
Otago[2]	1986 3 to 4 FTE, 2 persons, 3 vacancies
Palmerston North	3 FTE, 4 persons, 1986 1 vacancy
South Canterbury	0.5 FTE, 1 person
South Otago	Nil
Southland[4]	1986 1.0 FTE, 1 vacancy
Taranaki[5]	1 to 2 FTE, 2 vacancies
Taumarunui	Nil
Tauranga	Nil, 2 vacancies
Thames	1.0 FTE, 1 person
Vincent[2]	Nil, 0.125 FTE planned
Waiapu[1]	Nil
Waikato	3.3 FTE, 4 persons
Waipawa	Nil
Waitaki[2]	Nil
Wanganui	0.25 FTE, 1 person, 1986 vacancy
Wellington	5.25 FTE, 9 persons
West Coast[6]	Nil
Whakatane	0.2 FTE, 1 person

1 Now the Tairawhiti Area Health Board
2 Now the Otago Area Health Board
3 Now the Marlborough Area Health Board
4 Now the Southland Area Health Board
5 Now the Taranaki Area Health Board
6 Now the West Coast Area Health Board

International Exchange of Experts and Information in Rehabilitation

The following **monographs** are available from WRF and can be ordered by writing to IEEIR, World Rehabilitation Fund, 400 East 34th Street, New York, NY 10016. *Please enclose $3.00 per Monograph.*

#14 *Childhood Disability in the Family.* Elizabeth Zucman (1980), 80 pp.

#15 *A National Transport System for Severely Disabled Persons. - A Swedish Model.* Birger Roos (1982),18 pp.

#18 *International Approaches to Issues in Pulmonary Disease.* Irving Kass, Ed. (1982), 40 pp.

#21 *Rehabilitation in Australia and New Zealand: U.S. Observations.* Diane Woods, Ed. (1983), 189 pp.

#23 *Methods of Improving Verbal and Psychological Development in Children with Cerebral Palsy in the Soviet Union.* Robert Silverman, Tr. (1983), 96 pp.

#24 *Language Rehabilitation after Stroke: A Linguistic Model.* Gunther Peuser (1984), 67 pp.

#25 *Societal Provision for the Long-Term Needs of the Mentally and Physically Disabled in Britain and in Sweden Relative to Decision-Making in Newborn Intensive Care Units.* Rev. Ernle W.D. Young, PhD (1985), 86 pp.

#26 *Community-Based Rehabilitation Services - Experience of Bacolod, Philippines and the Asia/Pacific Region.* Antonio Periquet, M.D., (1984), 63 pp.

#27 *Independent Living and Disability Policy in the Netherlands: Three Models of Residential Care and Independent Living.* Gerben DeJong, PhD (1984), 94 pp.

#28 *The Future of Work for People with Disabilities: A View from Great Britain.* Paul Cornes (1984), 80 pp.

#30 *Employer Initiatives in the Employment or Re-Employment of People with Disabilities: Views from Abroad.* Diane Woods and Sheila Akabas, Eds. (1985), 128 pp.

#31 *The More We Do Together: Adapting the Environment for Children with Disabilities.* The Nordic Committee on Disability. (1985), 85 pp.

#32 *Life Transitions of Learning Disabled Adults: Perspectives from Several Countries.* Kate Garnett and Paul Gerber, Eds. (1985), 64 pp.

#33 *Bridges from School to Working Life: The View from Australia.* Trevor Parmenter (1986), 76 pp.

#34 *Independent Living and Attendant Care in Sweden: A Consumer Perspective.* Adolf Ratzka (1986), 80 pp.

#35 *Evaluation and Information the Field of Technical Aids for Disabled Persons: A European Perspective.* A. Pedotti and R. Andrich, Eds. (1986), 59 pp.

#36 *An International Perspective on Community Services and Rehabilitation for Persons with Chronic Mental Illness.* Mary A. Jansen, Ed. (1987), 78 pp.

#37 *Interactive Robotic Aids - One Option for Independent Living: An International Perspective.* Richard Foulds, Ed. (1986), 64 pp.

#38 *Educating the Pre-School Child with Cerebral Palsy at Home: Suggested Techniques from Russia.* Robert Silverman, Tr. (1987) (unpublished: WRF with UCPNYC), 120 pp.

#39 *Family Supports for Families with a Disabled Member.* Dorothy Lipsky, Ed. (1987), 79 pp.

WRF/HRC - *The Changing Nature of Work, Society and Disability: The Impact on Rehabilitation Policy.* Diane Woods, David Vandergoot, Eds. (1987), 64 pp.

#40 *New Developments in Worker Rehabilitation: the WorkCare Model in Australia.* Andrew G. Remenyi, Hal Swerissen, Shane A. Thomas, Eds. (1987), 102 pp.

#41 *Social Security Disability Programs: An International Perspective.* Barbara Duncan, Diane Woods, Eds. (co-published by WRF with Rehabilitation International), 160 pp.

#42 *Volunteer Rehabilitation Technology.* Jim Tobias, Diane Woods, Eds., (1988), 89 pp.

#43 *Disability in New Zealand: A Study of Rehabilitation and Disability Organizations.* L.R. Newsome, (1988)

#44 *From Barrier Free to Safe Environments: The New Zealand Experience.* William Wrightson (in press)

#45 *Aphasia Rehabilitation in the Asia-Pacific Region.*

#46 *Prevention: The First Step in Rehabilitation.* Ian Campbell

#47 *Developing Strategies for Communications about Disability: Experiences in the U.S., Hong Kong, India and Pakistan.* Barbara Kolucki.